SEQUENCE LISTING

<110> Carl Johan Friddle
      Turner, C. Alexander Jr.
      Walke, D. Wade
      Hilbun, Erin
      Nepomnichy, Boris
      Hu, Yi

<120> Novel Human Proteases and
      Polynucleotides Encoding the Same

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<140> US 09/938,330
<141> 2001-08-22

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gcg ctc tgc gcc gcc gcg ggc agc cgg acc cca gag ctg cac ctc tct   96
Ala Leu Cys Ala Ala Ala Gly Ser Arg Thr Pro Glu Leu His Leu Ser
                20   25   30

gga aag ctc agt gac tat ggt gtg aca gtg ccc tgc agc aca gac ttt   144
Gly Lys Leu Ser Asp Tyr Gly Val Thr Val Pro Cys Ser Thr Asp Phe
            35   40   45

cgg gga cgc ttc ctc tcc cac gtg gtg tct ggc cca gca gca gcc tct   192
Arg Gly Arg Phe Leu Ser His Val Val Ser Gly Pro Ala Ala Ala Ser
        50   55   60

gca ggg agc atg gta gtg gac acg cca ccc aca cta cca cga cac tcc   240
Ala Gly Ser Met Val Val Asp Thr Pro Pro Thr Leu Pro Arg His Ser

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agt cac ctc cgg gtg gct cgc agc cct ctg cac cca gga ggg acc ctg    288
Ser His Leu Arg Val Ala Arg Ser Pro Leu His Pro Gly Gly Thr Leu
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tgg cct ggc agg gtg ggg cgc cac tcc ctc tac ttc aat gtc act gtt    336
Trp Pro Gly Arg Val Gly Arg His Ser Leu Tyr Phe Asn Val Thr Val
               100                 105                 110

ttc ggg aag gaa ctg cac ttg cgc ctg cgg ccc aat cgg agg ttg gta    384
Phe Gly Lys Glu Leu His Leu Arg Leu Arg Pro Asn Arg Arg Leu Val
               115                 120                 125

gtg cca gga tcc tca gtg gag tgg cag gag gat ttt cgg gag ctg ttc    432
Val Pro Gly Ser Ser Val Glu Trp Gln Glu Asp Phe Arg Glu Leu Phe
       130                 135                 140

cgg cag ccc tta cgg cag gag tgt gtg tac act gga ggt gtc act gga    480
Arg Gln Pro Leu Arg Gln Glu Cys Val Tyr Thr Gly Gly Val Thr Gly
145                 150                 155                 160

atg cct ggg gca gct gtt gcc atc agc aac tgt gac gga ttg gcg ggc    528
Met Pro Gly Ala Ala Val Ala Ile Ser Asn Cys Asp Gly Leu Ala Gly
                165                 170                 175

ctc atc cgc aca gac agc acc gac ttc ttc att gag cct ctg gag cgg    576
Leu Ile Arg Thr Asp Ser Thr Asp Phe Phe Ile Glu Pro Leu Glu Arg
               180                 185                 190

ggc cag cag gag aag gag gcc agc ggg agg aca cat gtg gtg tac cgc    624
Gly Gln Gln Glu Lys Glu Ala Ser Gly Arg Thr His Val Val Tyr Arg
               195                 200                 205

cgg gag gcc gtc cag cag gag tgg gca gaa cct gac ggg gac ctg cac    672
Arg Glu Ala Val Gln Gln Glu Trp Ala Glu Pro Asp Gly Asp Leu His
       210                 215                 220

aat gaa gcc ttt ggc ctg gga gac ctt ccc aac ctg ctg ggc ctg gtg    720
Asn Glu Ala Phe Gly Leu Gly Asp Leu Pro Asn Leu Leu Gly Leu Val
225                 230                 235                 240

ggg gac cag ctg ggc gac aca gag cgg aag cgg cgg cat gcc aag cca    768
Gly Asp Gln Leu Gly Asp Thr Glu Arg Lys Arg Arg His Ala Lys Pro
               245                 250                 255

ggc agc tac agc atc gag gtg ctg ctg gtg gtg gac gac tcg gtg gtt    816
Gly Ser Tyr Ser Ile Glu Val Leu Leu Val Val Asp Asp Ser Val Val
               260                 265                 270

cgc ttc cat ggc aag gag cat gtg cag aac tat gtc ctc acc ctc atg    864
Arg Phe His Gly Lys Glu His Val Gln Asn Tyr Val Leu Thr Leu Met
               275                 280                 285

aat atc gta gat gag att tac cac gat gag tcc ctg ggg gtt cat ata    912
Asn Ile Val Asp Glu Ile Tyr His Asp Glu Ser Leu Gly Val His Ile
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2

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aat att gcc ctc gtc cgc ttg atc atg gtt ggc tac cga cag tcc ctg    960
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305                 310             315                 320

agc ctg atc gag cgc ggg aac ccc tca cgc agc ctg gag cag gtg tgt   1008
Ser Leu Ile Glu Arg Gly Asn Pro Ser Arg Ser Leu Glu Gln Val Cys
                325             330             335

cgc tgg gca cac tcc cag cag cgc cag gac ccc agc cac gct gag cac   1056
Arg Trp Ala His Ser Gln Gln Arg Gln Asp Pro Ser His Ala Glu His
            340             345             350

cat gac cac gtt gtg ttc ctc acc cgg cag gac ttt ggg ccc tca ggg   1104
His Asp His Val Val Phe Leu Thr Arg Gln Asp Phe Gly Pro Ser Gly
            355             360             365

tat gca ccc gtc act ggc atg tgt cac ccc ctg agg agc tgt gcc ctc   1152
Tyr Ala Pro Val Thr Gly Met Cys His Pro Leu Arg Ser Cys Ala Leu
    370             375             380

aac cat gag gat ggc ttc tcc tca gcc ttc gtg ata gct cat gag acc   1200
Asn His Glu Asp Gly Phe Ser Ser Ala Phe Val Ile Ala His Glu Thr
385             390             395             400

ggc cac gtg ctc ggc atg gag cat gac ggt cag ggg aat ggc tgt gca   1248
Gly His Val Leu Gly Met Glu His Asp Gly Gln Gly Asn Gly Cys Ala
            405             410             415

gat gag acc agc ctg ggc agc gtc atg gcg ccc ctg gtg cag gct gcc   1296
Asp Glu Thr Ser Leu Gly Ser Val Met Ala Pro Leu Val Gln Ala Ala
            420             425             430

ttc cac cgc ttc cat tgg tcc cgc tgc agc aag ctg gag ctc agc cgc   1344
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Tyr Leu Pro *
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Gly Lys Leu Ser Asp Tyr Gly Val Thr Val Pro Cys Ser Thr Asp Phe
        35              40                  45
Arg Gly Arg Phe Leu Ser His Val Val Ser Gly Pro Ala Ala Ala Ser
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3

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            50                        55                        60
Ala Gly Ser Met Val Val Asp Thr Pro Pro Thr Leu Pro Arg His Ser
 65                      70                        75                      80
Ser His Leu Arg Val Ala Arg Ser Pro Leu His Pro Gly Gly Thr Leu
                85                        90                        95
Trp Pro Gly Arg Val Gly Arg His Ser Leu Tyr Phe Asn Val Thr Val
               100                       105                       110
Phe Gly Lys Glu Leu His Leu Arg Leu Arg Pro Asn Arg Arg Leu Val
               115                       120                       125
Val Pro Gly Ser Ser Val Glu Trp Gln Glu Asp Phe Arg Glu Leu Phe
               130                       135                       140
Arg Gln Pro Leu Arg Gln Glu Cys Val Tyr Thr Gly Gly Val Thr Gly
 145                     150                       155                     160
Met Pro Gly Ala Ala Val Ala Ile Ser Asn Cys Asp Gly Leu Ala Gly
               165                       170                       175
Leu Ile Arg Thr Asp Ser Thr Asp Phe Phe Ile Glu Pro Leu Glu Arg
               180                       185                       190
Gly Gln Gln Glu Lys Glu Ala Ser Gly Arg Thr His Val Val Tyr Arg
               195                       200                       205
Arg Glu Ala Val Gln Gln Glu Trp Ala Glu Pro Asp Gly Asp Leu His
 210                     215                       220
Asn Glu Ala Phe Gly Leu Gly Asp Leu Pro Asn Leu Leu Gly Leu Val
 225                     230                       235                     240
Gly Asp Gln Leu Gly Asp Thr Glu Arg Lys Arg Arg His Ala Lys Pro
               245                       250                       255
Gly Ser Tyr Ser Ile Glu Val Leu Leu Val Val Asp Asp Ser Val Val
               260                       265                       270
Arg Phe His Gly Lys Glu His Val Gln Asn Tyr Val Leu Thr Leu Met
               275                       280                       285
Asn Ile Val Asp Glu Ile Tyr His Asp Glu Ser Leu Gly Val His Ile
 290                     295                       300
Asn Ile Ala Leu Val Arg Leu Ile Met Val Gly Tyr Arg Gln Ser Leu
 305                     310                       315                     320
Ser Leu Ile Glu Arg Gly Asn Pro Ser Arg Ser Leu Glu Gln Val Cys
               325                       330                       335
Arg Trp Ala His Ser Gln Gln Arg Gln Asp Pro Ser His Ala Glu His
               340                       345                       350
His Asp His Val Val Phe Leu Thr Arg Gln Asp Phe Gly Pro Ser Gly
               355                       360                       365
Tyr Ala Pro Val Thr Gly Met Cys His Pro Leu Arg Ser Cys Ala Leu
 370                     375                       380
Asn His Glu Asp Gly Phe Ser Ser Ala Phe Val Ile Ala His Glu Thr
 385                     390                       395                     400
Gly His Val Leu Gly Met Glu His Asp Gly Gln Gly Asn Gly Cys Ala
               405                       410                       415
Asp Glu Thr Ser Leu Gly Ser Val Met Ala Pro Leu Val Gln Ala Ala
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Phe His Arg Phe His Trp Ser Arg Cys Ser Lys Leu Glu Leu Ser Arg
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Tyr Leu Pro
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gcg ctc tgc rcc gcc gcg ggc agc cgg acc cca gag ctg cac ctc tct    96
Ala Leu Cys Xaa Ala Ala Gly Ser Arg Thr Pro Glu Leu His Leu Ser
                20                  25                  30

gga aag ctc agt gac tat ggt gtg aca gtg ccc tgc agc aca gac ttt   144
Gly Lys Leu Ser Asp Tyr Gly Val Thr Val Pro Cys Ser Thr Asp Phe
            35                  40                  45

cgg gga cgc ttc ctc tcc cac gtg gtg tct ggc cca gca gca gcc tct   192
Arg Gly Arg Phe Leu Ser His Val Val Ser Gly Pro Ala Ala Ala Ser
        50                  55                  60

gca ggg agc atg gta gtg gac acg cca ccc aca cta cca cga cac tcc   240
Ala Gly Ser Met Val Val Asp Thr Pro Pro Thr Leu Pro Arg His Ser
65                  70                  75                  80

agt cac ctc cgg gtg gct cgc agc cct ctg cac cca gga ggg acc ctg   288
Ser His Leu Arg Val Ala Arg Ser Pro Leu His Pro Gly Gly Thr Leu
                85                  90                  95

tgg cct ggc agg gtg ggg cgc cac tcc ctc tac ttc aat gtc act gtt   336
Trp Pro Gly Arg Val Gly Arg His Ser Leu Tyr Phe Asn Val Thr Val
            100                 105                 110

ttc ggg aag gaa ctg cac ttg cgc ctg cgg ccc aat cgg agg ttg gta   384
Phe Gly Lys Glu Leu His Leu Arg Leu Arg Pro Asn Arg Arg Leu Val
            115                 120                 125

gtg cca gga tcc tca gtg gag tgg cag gag gat ttt cgg gag ctg ttc   432
Val Pro Gly Ser Ser Val Glu Trp Gln Glu Asp Phe Arg Glu Leu Phe
        130                 135                 140

cgg cag ccc tta cgg cag gag tgt gtg tac act gga ggt gtc act gga   480
Arg Gln Pro Leu Arg Gln Glu Cys Val Tyr Thr Gly Gly Val Thr Gly
145                 150                 155                 160

atg cct ggg gca gct gtt gcc atc agc aac tgt gac gga ttg gcg ggc   528
Met Pro Gly Ala Ala Val Ala Ile Ser Asn Cys Asp Gly Leu Ala Gly
                165                 170                 175

ctc atc cgc aca gac agc acc gac ttc ttc att gag cct ctg gag cgg   576
Leu Ile Arg Thr Asp Ser Thr Asp Phe Phe Ile Glu Pro Leu Glu Arg
                180                 185                 190

ggc cag cag gag aag gag gcc agc ggg agg aca cat gtg gtg tac cgc   624
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Gly Gln Gln Glu Lys Glu Ala Ser Gly Arg Thr His Val Val Tyr Arg
        195                 200                 205

cgg gag gcc gtc cag cag gag tgg gca gaa cct gac ggg gac ctg cac    672
Arg Glu Ala Val Gln Gln Glu Trp Ala Glu Pro Asp Gly Asp Leu His
        210                 215                 220

aat gaa gcc ttt ggc ctg gga gac ctt ccc aac ctg ctg ggc ctg gtg    720
Asn Glu Ala Phe Gly Leu Gly Asp Leu Pro Asn Leu Leu Gly Leu Val
225                 230                 235                 240

ggg gac cag ctg ggc gac aca gag cgg aag cgg cgg cat gcc aag cca    768
Gly Asp Gln Leu Gly Asp Thr Glu Arg Lys Arg Arg His Ala Lys Pro
                245                 250                 255

ggc agc tac agc atc gag gtg ctg ctg gtg gtg gac gac tcg gtg gtt    816
Gly Ser Tyr Ser Ile Glu Val Leu Leu Val Val Asp Asp Ser Val Val
                260                 265                 270

cgc ttc cat ggc aag gag cat gtg cag aac tat gtc ctc acc ctc atg    864
Arg Phe His Gly Lys Glu His Val Gln Asn Tyr Val Leu Thr Leu Met
            275                 280                 285

aat atc gtg tgc tta cag gga agt cca taa                            894
Asn Ile Val Cys Leu Gln Gly Ser Pro  *
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<213> homo sapiens

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                20                  25                  30
Gly Lys Leu Ser Asp Tyr Gly Val Thr Val Pro Cys Ser Thr Asp Phe
            35                  40                  45
Arg Gly Arg Phe Leu Ser His Val Val Ser Gly Pro Ala Ala Ala Ser
        50                  55                  60
Ala Gly Ser Met Val Val Asp Thr Pro Pro Thr Leu Pro Arg His Ser
65                  70                  75                  80
Ser His Leu Arg Val Ala Arg Ser Pro Leu His Pro Gly Gly Thr Leu
                85                  90                  95
Trp Pro Gly Arg Val Gly Arg His Ser Leu Tyr Phe Asn Val Thr Val
                100                 105                 110
Phe Gly Lys Glu Leu His Leu Arg Leu Arg Pro Asn Arg Arg Leu Val
            115                 120                 125
Val Pro Gly Ser Ser Val Glu Trp Gln Glu Asp Phe Arg Glu Leu Phe
        130                 135                 140
Arg Gln Pro Leu Arg Gln Glu Cys Val Tyr Thr Gly Gly Val Thr Gly
145                 150                 155                 160
Met Pro Gly Ala Ala Val Ala Ile Ser Asn Cys Asp Gly Leu Ala Gly
                165                 170                 175
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6

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Leu Ile Arg Thr Asp Ser Thr Asp Phe Phe Ile Glu Pro Leu Glu Arg
            180             185             190
Gly Gln Gln Glu Lys Glu Ala Ser Gly Arg Thr His Val Val Tyr Arg
        195             200             205
Arg Glu Ala Val Gln Gln Glu Trp Ala Glu Pro Asp Gly Asp Leu His
    210             215             220
Asn Glu Ala Phe Gly Leu Gly Asp Leu Pro Asn Leu Leu Gly Leu Val
225             230             235             240
Gly Asp Gln Leu Gly Asp Thr Glu Arg Lys Arg Arg His Ala Lys Pro
            245             250             255
Gly Ser Tyr Ser Ile Glu Val Leu Leu Val Val Asp Asp Ser Val Val
        260             265             270
Arg Phe His Gly Lys Glu His Val Gln Asn Tyr Val Leu Thr Leu Met
        275             280             285
Asn Ile Val Cys Leu Gln Gly Ser Pro
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Met Ala Pro Leu Arg Ala Leu Leu Ser Tyr Leu Leu Pro Leu His Cys
1               5               10              15

gcg ctc tgc rcc gcc gcg ggc agc cgg acc cca gag ctg cac ctc tct    96
Ala Leu Cys Xaa Ala Ala Gly Ser Arg Thr Pro Glu Leu His Leu Ser
                20              25              30

gga aag ctc agt gac tat ggt gtg aca gtg ccc tgc agc aca gac ttt   144
Gly Lys Leu Ser Asp Tyr Gly Val Thr Val Pro Cys Ser Thr Asp Phe
            35              40              45

cgg gga cgc ttc ctc tcc cac gtg gtg tct ggc cca gca gca gcc tct   192
Arg Gly Arg Phe Leu Ser His Val Val Ser Gly Pro Ala Ala Ala Ser
    50              55              60

gca ggg agc atg gta gtg gac acg cca ccc aca cta cca cga cac tcc   240
Ala Gly Ser Met Val Val Asp Thr Pro Pro Thr Leu Pro Arg His Ser
65              70              75              80

agt cac ctc cgg gtg gct cgc agc cct ctg cac cca gga ggg acc ctg   288
Ser His Leu Arg Val Ala Arg Ser Pro Leu His Pro Gly Gly Thr Leu
            85              90              95

tgg cct ggc agg gtg ggg cgc cac tcc ctc tac ttc aat gtc act gtt   336
Trp Pro Gly Arg Val Gly Arg His Ser Leu Tyr Phe Asn Val Thr Val
            100             105             110
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ttc ggg aag gaa ctg cac ttg cgc ctg cgg ccc aat cgg agg ttg gta    384
Phe Gly Lys Glu Leu His Leu Arg Leu Arg Pro Asn Arg Arg Leu Val
        115                 120                 125

gtg cca gga tcc tca gtg gag tgg cag gag gat ttt cgg gag ctg ttc    432
Val Pro Gly Ser Ser Val Glu Trp Gln Glu Asp Phe Arg Glu Leu Phe
        130                 135                 140

cgg cag ccc tta cgg cag gag tgt gtg tac act gga ggt gtc act gga    480
Arg Gln Pro Leu Arg Gln Glu Cys Val Tyr Thr Gly Gly Val Thr Gly
145                 150                 155                 160

atg cct ggg gca gct gtt gcc atc agc aac tgt gac gga ttg gcg ggc    528
Met Pro Gly Ala Ala Val Ala Ile Ser Asn Cys Asp Gly Leu Ala Gly
                165                 170                 175

ctc atc cgc aca gac agc acc gac ttc ttc att gag cct ctg gag cgg    576
Leu Ile Arg Thr Asp Ser Thr Asp Phe Phe Ile Glu Pro Leu Glu Arg
                180                 185                 190

ggc cag cag gag aag gag gcc agc ggg agg aca cat gtg gtg tac cgc    624
Gly Gln Gln Glu Lys Glu Ala Ser Gly Arg Thr His Val Val Tyr Arg
            195                 200                 205

cgg gag gcc gtc cag cag gag tgg gca gaa cct gac ggg gac ctg cac    672
Arg Glu Ala Val Gln Gln Glu Trp Ala Glu Pro Asp Gly Asp Leu His
        210                 215                 220

aat gaa gcc ttt ggc ctg gga gac ctt ccc aac ctg ctg ggc ctg gtg    720
Asn Glu Ala Phe Gly Leu Gly Asp Leu Pro Asn Leu Leu Gly Leu Val
225                 230                 235                 240

ggg gac cag ctg ggc gac aca gag cgg aag cgg cgg cat gcc aag cca    768
Gly Asp Gln Leu Gly Asp Thr Glu Arg Lys Arg Arg His Ala Lys Pro
                245                 250                 255

ggc agc tac agc atc gag gtg ctg ctg gtg gtg gac gac tcg gtg gtt    816
Gly Ser Tyr Ser Ile Glu Val Leu Leu Val Val Asp Asp Ser Val Val
                260                 265                 270

cgc ttc cat ggc aag gag cat gtg cag aac tat gtc ctc acc ctc atg    864
Arg Phe His Gly Lys Glu His Val Gln Asn Tyr Val Leu Thr Leu Met
                275                 280                 285

aat atc gta gat gag att tac cac gat gag tcc ctg ggg gtt cat ata    912
Asn Ile Val Asp Glu Ile Tyr His Asp Glu Ser Leu Gly Val His Ile
        290                 295                 300

aat att gcc ctc gtc cgc ttg atc atg gtt ggc tac cga cag tcc ctg    960
Asn Ile Ala Leu Val Arg Leu Ile Met Val Gly Tyr Arg Gln Ser Leu
305                 310                 315                 320

agc ctg atc gag cgc ggg aac ccc tca cgc agc ctg gag cag gtg tgt   1008
Ser Leu Ile Glu Arg Gly Asn Pro Ser Arg Ser Leu Glu Gln Val Cys
                325                 330                 335
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8

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cgc tgg gca cac tcc cag cag cgc cag gac ccc agc cac gct gag cac    1056
Arg Trp Ala His Ser Gln Gln Arg Gln Asp Pro Ser His Ala Glu His
            340                 345                 350

cat gac cac gtt gtg ttc ctc acc cgg cag gac ttt ggg ccc tca ggg    1104
His Asp His Val Val Phe Leu Thr Arg Gln Asp Phe Gly Pro Ser Gly
            355                 360                 365

tat gca ccc gtc act ggc atg tgt cac ccc ctg agg agc tgt gcc ctc    1152
Tyr Ala Pro Val Thr Gly Met Cys His Pro Leu Arg Ser Cys Ala Leu
            370                 375                 380

aac cat gag gat ggc ttc tcc tca gcc ttc gtg ata gct cat gag acc    1200
Asn His Glu Asp Gly Phe Ser Ser Ala Phe Val Ile Ala His Glu Thr
385                 390                 395                 400

ggc cac gtg ctc ggc atg gag cat gac ggt cag ggg aat ggc tgt gca    1248
Gly His Val Leu Gly Met Glu His Asp Gly Gln Gly Asn Gly Cys Ala
                405                 410                 415

gat gag acc agc ctg ggc agc gtc atg gcg ccc ctg gtg cag gct gcc    1296
Asp Glu Thr Ser Leu Gly Ser Val Met Ala Pro Leu Val Gln Ala Ala
            420                 425                 430

ttc cac cgc ttc cat tgg tcc cgc tgc agc aag ctg gag ctc agc cgc    1344
Phe His Arg Phe His Trp Ser Arg Cys Ser Lys Leu Glu Leu Ser Arg
            435                 440                 445

tac ctc ccc tcc tac gac tgc ctc ctc gat gac ccc ttt gat cct gcc    1392
Tyr Leu Pro Ser Tyr Asp Cys Leu Leu Asp Asp Pro Phe Asp Pro Ala
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acc tgc ccg ggc ggc cgc tcg agc cct ata gtg agt cgt att agg atg    1440
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Ala Ala Thr Pro Phe Thr  *
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<212> PRT
<213> homo sapiens

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1               5                   10                  15
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            20                  25                  30
Gly Lys Leu Ser Asp Tyr Gly Val Thr Val Pro Cys Ser Thr Asp Phe
            35                  40                  45
Arg Gly Arg Phe Leu Ser His Val Val Ser Gly Pro Ala Ala Ala Ser
    50                  55                  60
Ala Gly Ser Met Val Val Asp Thr Pro Pro Thr Leu Pro Arg His Ser
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9

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        65                    70                    75                    80
   Ser His Leu Arg Val Ala Arg Ser Pro Leu His Pro Gly Gly Thr Leu
                   85          Gly Arg His Ser Leu Tyr Phe Asn Val Thr Val
   Trp Pro Gly Arg Val               90                    95
   Phe Gly Lys Glu Leu His Leu Arg Leu Arg Pro Asn Arg Arg Leu Val
                  115              120                 125
   Val Pro Gly Ser Ser Val Glu Trp Gln Glu Asp Phe Arg Glu Leu Phe
       130                 135                 140
   Arg Gln Pro Leu Arg Gln Glu Cys Val Tyr Thr Gly Gly Val Thr Gly
   145                 150                 155                 160
   Met Pro Gly Ala Ala Val Ala Ile Ser Asn Cys Asp Gly Leu Ala Gly
                  165                 170                 175
   Leu Ile Arg Thr Asp Ser Thr Asp Phe Phe Ile Glu Pro Leu Glu Arg
                  180                 185                 190
   Gly Gln Gln Glu Lys Glu Ala Ser Gly Arg Thr His Val Val Tyr Arg
                  195                 200                 205
   Arg Glu Ala Val Gln Gln Glu Trp Ala Glu Pro Asp Gly Asp Leu His
       210                 215                 220
   Asn Glu Ala Phe Gly Leu Gly Asp Leu Pro Asn Leu Leu Gly Leu Val
   225                 230                 235                 240
   Gly Asp Gln Leu Gly Asp Thr Glu Arg Lys Arg Arg His Ala Lys Pro
                  245                 250                 255
   Gly Ser Tyr Ser Ile Glu Val Leu Leu Val Val Asp Asp Ser Val Val
                  260                 265                 270
   Arg Phe His Gly Lys Glu His Val Gln Asn Tyr Val Leu Thr Leu Met
                  275                 280                 285
   Asn Ile Val Asp Glu Ile Tyr His Asp Glu Ser Leu Gly Val His Ile
       290                 295                 300
   Asn Ile Ala Leu Val Arg Leu Ile Met Val Gly Tyr Arg Gln Ser Leu
   305                 310                 315                 320
   Ser Leu Ile Glu Arg Gly Asn Pro Ser Arg Ser Leu Glu Gln Val Cys
                  325                 330                 335
   Arg Trp Ala His Ser Gln Gln Arg Gln Asp Pro Ser His Ala Glu His
                  340                 345                 350
   His Asp His Val Val Phe Leu Thr Arg Gln Asp Phe Gly Pro Ser Gly
                  355                 360                 365
   Tyr Ala Pro Val Thr Gly Met Cys His Pro Leu Arg Ser Cys Ala Leu
       370                 375                 380
   Asn His Glu Asp Gly Phe Ser Ser Ala Phe Val Ile Ala His Glu Thr
   385                 390                 395                 400
   Gly His Val Leu Gly Met Glu His Asp Gly Gln Gly Asn Gly Cys Ala
                  405                 410                 415
   Asp Glu Thr Ser Leu Gly Ser Val Met Ala Pro Leu Val Gln Ala Ala
                  420                 425                 430
   Phe His Arg Phe His Trp Ser Arg Cys Ser Lys Leu Glu Leu Ser Arg
                  435                 440                 445
   Tyr Leu Pro Ser Tyr Asp Cys Leu Leu Asp Asp Pro Phe Asp Pro Ala
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   Thr Cys Pro Gly Gly Arg Ser Ser Pro Ile Val Ser Arg Ile Arg Met
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   Ala Ala Thr Pro Phe Thr
                  485


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atg gct cca ctc cgc gcg ctg ctg tcc tac ctg ctg cct ttg cac tgt    48
Met Ala Pro Leu Arg Ala Leu Leu Ser Tyr Leu Leu Pro Leu His Cys
1               5                   10                  15

gcg ctc tgc rcc gcc gcg ggc agc cgg acc cca gag ctg cac ctc tct    96
Ala Leu Cys Xaa Ala Ala Gly Ser Arg Thr Pro Glu Leu His Leu Ser
                20                  25                  30

gga aag ctc agt gac tat ggt gtg aca gtg ccc tgc agc aca gac ttt   144
Gly Lys Leu Ser Asp Tyr Gly Val Thr Val Pro Cys Ser Thr Asp Phe
            35                  40                  45

cgg gga cgc ttc ctc tcc cac gtg gtg tct ggc cca gca gca gcc tct   192
Arg Gly Arg Phe Leu Ser His Val Val Ser Gly Pro Ala Ala Ala Ser
        50                  55                  60

gca ggg agc atg gta gtg gac acg cca ccc aca cta cca cga cac tcc   240
Ala Gly Ser Met Val Val Asp Thr Pro Pro Thr Leu Pro Arg His Ser
65                  70                  75                  80

agt cac ctc cgg gtg gct cgc agc cct ctg cac cca gga ggg acc ctg   288
Ser His Leu Arg Val Ala Arg Ser Pro Leu His Pro Gly Gly Thr Leu
                85                  90                  95

tgg cct ggc agg gtg ggg cgc cac tcc ctc tac ttc aat gtc act gtt   336
Trp Pro Gly Arg Val Gly Arg His Ser Leu Tyr Phe Asn Val Thr Val
            100                 105                 110

ttc ggg aag gaa ctg cac ttg cgc ctg cgg ccc aat cgg agg ttg gta   384
Phe Gly Lys Glu Leu His Leu Arg Leu Arg Pro Asn Arg Arg Leu Val
            115                 120                 125

gtg cca gga tcc tca gtg gag tgg cag gag gat ttt cgg gag ctg ttc   432
Val Pro Gly Ser Ser Val Glu Trp Gln Glu Asp Phe Arg Glu Leu Phe
        130                 135                 140

cgg cag ccc tta cgg cag gag tgt gtg tac act gga ggt gtc act gga   480
Arg Gln Pro Leu Arg Gln Glu Cys Val Tyr Thr Gly Gly Val Thr Gly
145                 150                 155                 160

atg cct ggg gca gct gtt gcc atc agc aac tgt gac gga ttg gcg ggc   528
Met Pro Gly Ala Ala Val Ala Ile Ser Asn Cys Asp Gly Leu Ala Gly
                165                 170                 175

ctc atc cgc aca gac agc acc gac ttc ttc att gag cct ctg gag cgg   576
Leu Ile Arg Thr Asp Ser Thr Asp Phe Phe Ile Glu Pro Leu Glu Arg
            180                 185                 190
```

11

```
ggc cag cag gag aag gag gcc agc ggg agg aca cat gtg gtg tac cgc    624
Gly Gln Gln Glu Lys Glu Ala Ser Gly Arg Thr His Val Val Tyr Arg
            195                 200                 205

cgg gag gcc gtc cag cag gag tgg gca gaa cct gac ggg gac ctg cac    672
Arg Glu Ala Val Gln Gln Glu Trp Ala Glu Pro Asp Gly Asp Leu His
            210                 215                 220

aat gaa gcc ttt ggc ctg gga gac ctt ccc aac ctg ctg ggc ctg gtg    720
Asn Glu Ala Phe Gly Leu Gly Asp Leu Pro Asn Leu Leu Gly Leu Val
225                 230                 235                 240

ggg gac cag ctg ggc gac aca gag cgg aag cgg cgg cat gcc aag cca    768
Gly Asp Gln Leu Gly Asp Thr Glu Arg Lys Arg Arg His Ala Lys Pro
                245                 250                 255

ggc agc tac agc atc gag gtg ctg ctg gtg gtg gac gac tcg gtg gtt    816
Gly Ser Tyr Ser Ile Glu Val Leu Leu Val Val Asp Asp Ser Val Val
                260                 265                 270

cgc ttc cat ggc aag gag cat gtg cag aac tat gtc ctc acc ctc atg    864
Arg Phe His Gly Lys Glu His Val Gln Asn Tyr Val Leu Thr Leu Met
            275                 280                 285

aat atc gta gat gag att tac cac gat gag tcc ctg ggg gtt cat ata    912
Asn Ile Val Asp Glu Ile Tyr His Asp Glu Ser Leu Gly Val His Ile
        290                 295                 300

aat att gcc ctc gtc cgc ttg atc atg gtt ggc tac cga cag tcc ctg    960
Asn Ile Ala Leu Val Arg Leu Ile Met Val Gly Tyr Arg Gln Ser Leu
305                 310                 315                 320

agc ctg atc gag cgc ggg aac ccc tca cgc agc ctg gag cag gtg tgt   1008
Ser Leu Ile Glu Arg Gly Asn Pro Ser Arg Ser Leu Glu Gln Val Cys
                325                 330                 335

cgc tgg gca cac tcc cag cag cgc cag gac ccc agc cac gct gag cac   1056
Arg Trp Ala His Ser Gln Gln Arg Gln Asp Pro Ser His Ala Glu His
            340                 345                 350

cat gac cac gtt gtg ttc ctc acc cgg cag gac ttt ggg ccc tca ggg   1104
His Asp His Val Val Phe Leu Thr Arg Gln Asp Phe Gly Pro Ser Gly
            355                 360                 365

tat gca ccc gtc act ggc atg tgt cac ccc ctg agg agc tgt gcc ctc   1152
Tyr Ala Pro Val Thr Gly Met Cys His Pro Leu Arg Ser Cys Ala Leu
370                 375                 380

aac cat gag gat ggc ttc tcc tca gcc ttc gtg ata gct cat gag acc   1200
Asn His Glu Asp Gly Phe Ser Ser Ala Phe Val Ile Ala His Glu Thr
385                 390                 395                 400

ggc cac gtg ctc ggc atg gag cat gac ggt cag ggg aat ggc tgt gca   1248
Gly His Val Leu Gly Met Glu His Asp Gly Gln Gly Asn Gly Cys Ala
                405                 410                 415
```

12

```
gat gag acc agc ctg ggc agc gtc atg gcg ccc ctg gtg cag gct gcc      1296
Asp Glu Thr Ser Leu Gly Ser Val Met Ala Pro Leu Val Gln Ala Ala
        420             425             430

ttc cac cgc ttc cat tgg tcc cgc tgc agc aag ctg gag ctc agc cgc      1344
Phe His Arg Phe His Trp Ser Arg Cys Ser Lys Leu Glu Leu Ser Arg
        435             440             445

tac ctc ccc tcc tac gac tgc ctc ctc gat gac ccc ttt gat cct gcc      1392
Tyr Leu Pro Ser Tyr Asp Cys Leu Leu Asp Asp Pro Phe Asp Pro Ala
        450             455             460

tgg ccc cag ccc cca gag ctg cct ggg atc aac tac tca atg gat gag      1440
Trp Pro Gln Pro Pro Glu Leu Pro Gly Ile Asn Tyr Ser Met Asp Glu
465             470             475             480

cag tgc cgc ttt gac ttt ggc agt ggc tac cag acc tgc ttg gca ttc      1488
Gln Cys Arg Phe Asp Phe Gly Ser Gly Tyr Gln Thr Cys Leu Ala Phe
                485             490             495

agg acc ttt gag ccc tgc aag cag ctg tgg tgc agc cat cct gac aac      1536
Arg Thr Phe Glu Pro Cys Lys Gln Leu Trp Cys Ser His Pro Asp Asn
            500             505             510

cmg tay ttc tgc aag acc aag aag ggg ccc ccg ctg gat ggg act gag      1584
Xaa Tyr Phe Cys Lys Thr Lys Lys Gly Pro Pro Leu Asp Gly Thr Glu
        515             520             525

tgt gca ccc ggc aag tgg tgc ttc aaa ggt cac tgc atc tgg aag tcg      1632
Cys Ala Pro Gly Lys Trp Cys Phe Lys Gly His Cys Ile Trp Lys Ser
        530             535             540

ccg gag cag aca tat ggc cag gat gga ggc tgg agc tcc tgg acc aag      1680
Pro Glu Gln Thr Tyr Gly Gln Asp Gly Gly Trp Ser Ser Trp Thr Lys
545             550             555             560

ttt ggg tca tgt tcg cgg tca tgt ggg ggc ggg gtg cga tcc cgc agc      1728
Phe Gly Ser Cys Ser Arg Ser Cys Gly Gly Gly Val Arg Ser Arg Ser
                565             570             575

cgg agc tgc aac aac ccc tcc cca gcc tat gga ggc cgc cyg tgc tta      1776
Arg Ser Cys Asn Asn Pro Ser Pro Ala Tyr Gly Gly Arg Xaa Cys Leu
            580             585             590

ggg ccc atg ttc gag tac cag gtc tgc aac agc gag gag tgc cct ggg      1824
Gly Pro Met Phe Glu Tyr Gln Val Cys Asn Ser Glu Glu Cys Pro Gly
        595             600             605

acc tac gag gac ttc cgg gcc cag cag tgt gcc aag cgc aac tcs tac      1872
Thr Tyr Glu Asp Phe Arg Ala Gln Gln Cys Ala Lys Arg Asn Xaa Tyr
        610             615             620

tat gtg cac cag aat gcc aag cac ags tgg gtg ccc tac gag cct gac      1920
Tyr Val His Gln Asn Ala Lys His Xaa Trp Val Pro Tyr Glu Pro Asp
625             630             635             640
```

13

```
gat gac gcc cag aag tgt gag ctg atc tgc cag tcg gcg gac acr ggg    1968
Asp Asp Ala Gln Lys Cys Glu Leu Ile Cys Gln Ser Ala Asp Xaa Gly
                645                 650                 655

gac gtg gtg ttc atg aac cag gtg gtt cac gat ggg aca cgc tgc agc    2016
Asp Val Val Phe Met Asn Gln Val Val His Asp Gly Thr Arg Cys Ser
                660                 665                 670

tac cgg gac cca tac agc gtc tgt gcg cgt ggc gag tgt gtg cct gtc    2064
Tyr Arg Asp Pro Tyr Ser Val Cys Ala Arg Gly Glu Cys Val Pro Val
                675                 680                 685

ggc tgt gac aag gag gtg ggg tcc atg aag gcg gat gac aag tgt gga    2112
Gly Cys Asp Lys Glu Val Gly Ser Met Lys Ala Asp Asp Lys Cys Gly
                690                 695                 700

gtc tgc ggg ggt gac aac tcc cac tgc agg act gtg aag ggg acg ctg    2160
Val Cys Gly Gly Asp Asn Ser His Cys Arg Thr Val Lys Gly Thr Leu
705                 710                 715                 720

ggc aag gcc tcc aag cag gca gga gct ctc aag ctg gtg cag atc cca    2208
Gly Lys Ala Ser Lys Gln Ala Gly Ala Leu Lys Leu Val Gln Ile Pro
                725                 730                 735

gca ggt gcc agg cac atc cag att gag gca ctg gag aag tcc ccc cac    2256
Ala Gly Ala Arg His Ile Gln Ile Glu Ala Leu Glu Lys Ser Pro His
                740                 745                 750

cgs wyw gtg gtg aag aac cag gtc acc ggc agc ttc atc ctc aac ccc    2304
Xaa Xaa Val Val Lys Asn Gln Val Thr Gly Ser Phe Ile Leu Asn Pro
                755                 760                 765

aag ggc aag gaa gcc aca agc cgg acc ttc acc gcc atg ggc ctg gag    2352
Lys Gly Lys Glu Ala Thr Ser Arg Thr Phe Thr Ala Met Gly Leu Glu
                770                 775                 780

tgg gag gat gcg gtg gag gat gcc aag gaa agc ctc aag acc agc ggg    2400
Trp Glu Asp Ala Val Glu Asp Ala Lys Glu Ser Leu Lys Thr Ser Gly
785                 790                 795                 800

ccc ctg cct gaa gcc att gcc atc ctg gct ctc ccc cca act gag ggt    2448
Pro Leu Pro Glu Ala Ile Ala Ile Leu Ala Leu Pro Pro Thr Glu Gly
                805                 810                 815

ggc ccc cgc agc agc ctg gcc tac aag tac gtc atc cat gag gac ctg    2496
Gly Pro Arg Ser Ser Leu Ala Tyr Lys Tyr Val Ile His Glu Asp Leu
                820                 825                 830

ctg ccc ctt atc ggg agc aac aat gtg ctc ctg gag gag atg gac acc    2544
Leu Pro Leu Ile Gly Ser Asn Asn Val Leu Leu Glu Glu Met Asp Thr
                835                 840                 845

tat gag tgg gcg ctc aag agc tgg gcc ccc tgc agc aag gcc tgt gga    2592
Tyr Glu Trp Ala Leu Lys Ser Trp Ala Pro Cys Ser Lys Ala Cys Gly
                850                 855                 860
```

14

```
gga ggg atc cag ttc acc aaa tac ggc tgc cgg cgc aga cga gac cac    2640
Gly Gly Ile Gln Phe Thr Lys Tyr Gly Cys Arg Arg Arg Arg Asp His
865             870             875             880

cac atg gtg cag cga cac ctg tgt gac cac aag aag agg ccc aag ccc    2688
His Met Val Gln Arg His Leu Cys Asp His Lys Lys Arg Pro Lys Pro
                885             890             895

atc cgc cgg cgc tgc aac cag cac ccg tgc tct cag cct gtg tgg gtg    2736
Ile Arg Arg Arg Cys Asn Gln His Pro Cys Ser Gln Pro Val Trp Val
            900             905             910

acg gag gag tgg ggt gcc tgc agc cgg agc tgt ggg aag ctg ggg gtg    2784
Thr Glu Glu Trp Gly Ala Cys Ser Arg Ser Cys Gly Lys Leu Gly Val
            915             920             925

cag aca cgg ggg ata cag tgc ctg ctg ccc ctc tcc aat gga acc cac    2832
Gln Thr Arg Gly Ile Gln Cys Leu Leu Pro Leu Ser Asn Gly Thr His
            930             935             940

aag gtc atg ccg gcc aaa gcc tgc gcc ggg gac cgg cct gag gcc cga    2880
Lys Val Met Pro Ala Lys Ala Cys Ala Gly Asp Arg Pro Glu Ala Arg
945             950             955             960

cgg ccc tgt ctc cga gtg ccc tgc cca gcc cag tgg agg ctg gga gcc    2928
Arg Pro Cys Leu Arg Val Pro Cys Pro Ala Gln Trp Arg Leu Gly Ala
            965             970             975

tgg tcc cag tgc tct gcc acc tgt gga gag ggc atc cag cag cgg cag    2976
Trp Ser Gln Cys Ser Ala Thr Cys Gly Glu Gly Ile Gln Gln Arg Gln
            980             985             990

gtg gtg tgc agg acc aac gcc aac agc ctc ggg cat tgc gag ggg gat    3024
Val Val Cys Arg Thr Asn Ala Asn Ser Leu Gly His Cys Glu Gly Asp
            995             1000            1005

agg cca gac act gtc cag gtc tgc arc ctg ccc gcc tgt gga gga aat    3072
Arg Pro Asp Thr Val Gln Val Cys Xaa Leu Pro Ala Cys Gly Gly Asn
            1010            1015            1020

cac cag aac tcc acg gtg agg gcc gat gtc tgg gaa ctt ggg acg cca    3120
His Gln Asn Ser Thr Val Arg Ala Asp Val Trp Glu Leu Gly Thr Pro
1025            1030            1035            1040

gag ggg cag tgg gtg cca caa tct gra ccc cta cat ccc att aac aag    3168
Glu Gly Gln Trp Val Pro Gln Ser Xaa Pro Leu His Pro Ile Asn Lys
            1045            1050            1055

ata tca tca atg tgt gca gcg gag ccc tgc acg gga gac agg tct gtc    3216
Ile Ser Ser Met Cys Ala Ala Glu Pro Cys Thr Gly Asp Arg Ser Val
            1060            1065            1070

ttc tgc cag atg gaa gtg ctc gat cgc tac tgc tcc att ccc ggc tac    3264
Phe Cys Gln Met Glu Val Leu Asp Arg Tyr Cys Ser Ile Pro Gly Tyr
            1075            1080            1085
```

15

```
cac cgg ctc tgc tgt gtg tcc tgc atc aag aag gcc tcg ggc ccc aac     3312
His Arg Leu Cys Cys Val Ser Cys Ile Lys Lys Ala Ser Gly Pro Asn
    1090                1095                1100

cct ggc cca gac cct ggc cca acc tca ctg ccc ccc ttc tcc act cct     3360
Pro Gly Pro Asp Pro Gly Pro Thr Ser Leu Pro Pro Phe Ser Thr Pro
1105                1110                1115                1120

gga agc ccc tta cca gga ccc cag gac cct gca gat gct gca gag cct     3408
Gly Ser Pro Leu Pro Gly Pro Gln Asp Pro Ala Asp Ala Ala Glu Pro
            1125                1130                1135

cct gga aag cca acg gga tca gag gac cat cag cat ggc cga gcc aca     3456
Pro Gly Lys Pro Thr Gly Ser Glu Asp His Gln His Gly Arg Ala Thr
            1140                1145                1150

cag ctc cca gga gct ctg gat aca agc tcc cca ggg acc cag cat ccc     3504
Gln Leu Pro Gly Ala Leu Asp Thr Ser Ser Pro Gly Thr Gln His Pro
            1155                1160                1165

ttt gcc cct gag aca cca atc cct gga gca tcc tgg agc atc tcc cct     3552
Phe Ala Pro Glu Thr Pro Ile Pro Gly Ala Ser Trp Ser Ile Ser Pro
    1170                1175                1180

acc acc ccc ggg ggg ctg cct tgg ggc tgg act cag aca cct acg cca     3600
Thr Thr Pro Gly Gly Leu Pro Trp Gly Trp Thr Gln Thr Pro Thr Pro
1185                1190                1195                1200

gtc cct gag gac aaa ggg caa cct gga gaa gac ctg aga cct gcc cgg     3648
Val Pro Glu Asp Lys Gly Gln Pro Gly Glu Asp Leu Arg Pro Ala Arg
            1205                1210                1215

gcg gcc gct cga gcc cta tag                                          3669
Ala Ala Ala Arg Ala Leu  *
            1220


<210> 8
<211> 1222
<212> PRT
<213> homo sapiens

<400> 8
Met Ala Pro Leu Arg Ala Leu Leu Ser Tyr Leu Leu Pro Leu His Cys
1               5                   10                  15
Ala Leu Cys Thr Ala Ala Gly Ser Arg Thr Pro Glu Leu His Leu Ser
            20                  25                  30
Gly Lys Leu Ser Asp Tyr Gly Val Thr Val Pro Cys Ser Thr Asp Phe
        35                  40                  45
Arg Gly Arg Phe Leu Ser His Val Val Ser Gly Pro Ala Ala Ala Ser
    50                  55                  60
Ala Gly Ser Met Val Val Asp Thr Pro Pro Thr Leu Pro Arg His Ser
65                  70                  75                  80
Ser His Leu Arg Val Ala Arg Ser Pro Leu His Pro Gly Gly Thr Leu
            85                  90                  95
```

16

```
Trp Pro Gly Arg Val Gly Arg His Ser Leu Tyr Phe Asn Val Thr Val
        100                     105             110
Phe Gly Lys Glu Leu His Leu Arg Leu Arg Pro Asn Arg Arg Leu Val
        115             120                     125
Val Pro Gly Ser Ser Val Glu Trp Gln Glu Asp Phe Arg Glu Leu Phe
    130                 135                 140
Arg Gln Pro Leu Arg Gln Glu Cys Val Tyr Thr Gly Gly Val Thr Gly
145                     150                 155                 160
Met Pro Gly Ala Ala Val Ala Ile Ser Asn Cys Asp Gly Leu Ala Gly
                165                 170                 175
Leu Ile Arg Thr Asp Ser Thr Asp Phe Phe Ile Glu Pro Leu Glu Arg
            180                 185                 190
Gly Gln Gln Glu Lys Glu Ala Ser Gly Arg Thr His Val Val Tyr Arg
        195             200                 205
Arg Glu Ala Val Gln Gln Glu Trp Ala Glu Pro Asp Gly Asp Leu His
    210                 215                 220
Asn Glu Ala Phe Gly Leu Gly Asp Leu Pro Asn Leu Leu Gly Leu Val
225                 230                 235                 240
Gly Asp Gln Leu Gly Asp Thr Glu Arg Lys Arg Arg His Ala Lys Pro
                245                 250                 255
Gly Ser Tyr Ser Ile Glu Val Leu Leu Val Val Asp Asp Ser Val Val
                260                 265                 270
Arg Phe His Gly Lys Glu His Val Gln Asn Tyr Val Leu Thr Leu Met
        275                 280                 285
Asn Ile Val Asp Glu Ile Tyr His Asp Glu Ser Leu Gly Val His Ile
        290                 295                 300
Asn Ile Ala Leu Val Arg Leu Ile Met Val Gly Tyr Arg Gln Ser Leu
305                 310                 315                 320
Ser Leu Ile Glu Arg Gly Asn Pro Ser Arg Ser Leu Glu Gln Val Cys
                325                 330                 335
Arg Trp Ala His Ser Gln Gln Arg Gln Asp Pro Ser His Ala Glu His
                340                 345                 350
His Asp His Val Val Phe Leu Thr Arg Gln Asp Phe Gly Pro Ser Gly
        355                 360                 365
Tyr Ala Pro Val Thr Gly Met Cys His Pro Leu Arg Ser Cys Ala Leu
    370                 375                 380
Asn His Glu Asp Gly Phe Ser Ser Ala Phe Val Ile Ala His Glu Thr
385                 390                 395                 400
Gly His Val Leu Gly Met Glu His Asp Gly Gln Gly Asn Gly Cys Ala
                405             410                 415
Asp Glu Thr Ser Leu Gly Ser Val Met Ala Pro Leu Val Gln Ala Ala
                420             425                 430
Phe His Arg Phe His Trp Ser Arg Cys Ser Lys Leu Glu Leu Ser Arg
        435             440                 445
Tyr Leu Pro Ser Tyr Asp Cys Leu Leu Asp Asp Pro Phe Asp Pro Ala
    450                 455                 460
Trp Pro Gln Pro Pro Glu Leu Pro Gly Ile Asn Tyr Ser Met Asp Glu
465                 470                 475                 480
Gln Cys Arg Phe Asp Phe Gly Ser Gly Tyr Gln Thr Cys Leu Ala Phe
        485                 490                 495
Arg Thr Phe Glu Pro Cys Lys Gln Leu Trp Cys Ser His Pro Asp Asn
        500                 505                 510
Pro Tyr Phe Cys Lys Thr Lys Lys Gly Pro Pro Leu Asp Gly Thr Glu
        515                 520                 525
Cys Ala Pro Gly Lys Trp Cys Phe Lys Gly His Cys Ile Trp Lys Ser
    530                 535                 540
```

17

```
Pro Glu Gln Thr Tyr Gly Gln Asp Gly Gly Trp Ser Ser Trp Thr Lys
545                 550             555             560
Phe Gly Ser Cys Ser Arg Ser Cys Gly Gly Val Arg Ser Arg Ser
                565             570             575
Arg Ser Cys Asn Asn Pro Ser Pro Ala Tyr Gly Gly Arg Pro Cys Leu
            580             585             590
Gly Pro Met Phe Glu Tyr Gln Val Cys Asn Ser Glu Glu Cys Pro Gly
            595             600             605
Thr Tyr Glu Asp Phe Arg Ala Gln Gln Cys Ala Lys Arg Asn Ser Tyr
    610             615             620
Tyr Val His Gln Asn Ala Lys His Ser Trp Val Pro Tyr Glu Pro Asp
625             630             635             640
Asp Asp Ala Gln Lys Cys Glu Leu Ile Cys Gln Ser Ala Asp Thr Gly
            645             650             655
Asp Val Val Phe Met Asn Gln Val Val His Asp Gly Thr Arg Cys Ser
            660             665             670
Tyr Arg Asp Pro Tyr Ser Val Cys Ala Arg Gly Glu Cys Val Pro Val
            675             680             685
Gly Cys Asp Lys Glu Val Gly Ser Met Lys Ala Asp Asp Lys Cys Gly
    690             695             700
Val Cys Gly Gly Asp Asn Ser His Cys Arg Thr Val Lys Gly Thr Leu
705             710             715             720
Gly Lys Ala Ser Lys Gln Ala Gly Ala Leu Lys Leu Val Gln Ile Pro
            725             730             735
Ala Gly Ala Arg His Ile Gln Ile Glu Ala Leu Glu Lys Ser Pro His
            740             745             750
Arg Ser Val Val Lys Asn Gln Val Thr Gly Ser Phe Ile Leu Asn Pro
            755             760             765
Lys Gly Lys Glu Ala Thr Ser Arg Thr Phe Thr Ala Met Gly Leu Glu
    770             775             780
Trp Glu Asp Ala Val Glu Asp Ala Lys Glu Ser Leu Lys Thr Ser Gly
785             790             795             800
Pro Leu Pro Glu Ala Ile Ala Ile Leu Ala Leu Pro Pro Thr Glu Gly
            805             810             815
Gly Pro Arg Ser Ser Leu Ala Tyr Lys Tyr Val Ile His Glu Asp Leu
            820             825             830
Leu Pro Leu Ile Gly Ser Asn Asn Val Leu Leu Glu Glu Met Asp Thr
            835             840             845
Tyr Glu Trp Ala Leu Lys Ser Trp Ala Pro Cys Ser Lys Ala Cys Gly
    850             855             860
Gly Gly Ile Gln Phe Thr Lys Tyr Gly Cys Arg Arg Arg Arg Asp His
865             870             875             880
His Met Val Gln Arg His Leu Cys Asp His Lys Lys Arg Pro Lys Pro
            885             890             895
Ile Arg Arg Arg Cys Asn Gln His Pro Cys Ser Gln Pro Val Trp Val
            900             905             910
Thr Glu Glu Trp Gly Ala Cys Ser Arg Ser Cys Gly Lys Leu Gly Val
    915             920             925
Gln Thr Arg Gly Ile Gln Cys Leu Leu Pro Leu Ser Asn Gly Thr His
    930             935             940
Lys Val Met Pro Ala Lys Ala Cys Ala Gly Asp Arg Pro Glu Ala Arg
945             950             955             960
Arg Pro Cys Leu Arg Val Pro Cys Pro Ala Gln Trp Arg Leu Gly Ala
            965             970             975
Trp Ser Gln Cys Ser Ala Thr Cys Gly Glu Gly Ile Gln Gln Arg Gln
            980             985             990
```

18

```
Val Val Cys Arg Thr Asn Ala Asn Ser Leu Gly His Cys Glu Gly Asp
        995                 1000                1005
Arg Pro Asp Thr Val Gln Val Cys Ser Leu Pro Ala Cys Gly Gly Asn
        1010                1015                1020
His Gln Asn Ser Thr Val Arg Ala Asp Val Trp Glu Leu Gly Thr Pro
1025                1030                1035                1040
Glu Gly Gln Trp Val Pro Gln Ser Gly Pro Leu His Pro Ile Asn Lys
            1045                1050                1055
Ile Ser Ser Met Cys Ala Ala Glu Pro Cys Thr Gly Asp Arg Ser Val
        1060                1065                1070
Phe Cys Gln Met Glu Val Leu Asp Arg Tyr Cys Ser Ile Pro Gly Tyr
        1075                1080                1085
His Arg Leu Cys Cys Val Ser Cys Ile Lys Lys Ala Ser Gly Pro Asn
        1090                1095                1100
Pro Gly Pro Asp Pro Gly Pro Thr Ser Leu Pro Pro Phe Ser Thr Pro
1105                1110                1115                1120
Gly Ser Pro Leu Pro Gly Pro Gln Asp Pro Ala Asp Ala Ala Glu Pro
            1125                1130                1135
Pro Gly Lys Pro Thr Gly Ser Glu Asp His Gln His Gly Arg Ala Thr
            1140                1145                1150
Gln Leu Pro Gly Ala Leu Asp Thr Ser Ser Pro Gly Thr Gln His Pro
        1155                1160                1165
Phe Ala Pro Glu Thr Pro Ile Pro Gly Ala Ser Trp Ser Ile Ser Pro
1170                1175                1180
Thr Thr Pro Gly Gly Leu Pro Trp Gly Trp Thr Gln Thr Pro Thr Pro
1185                1190                1195                1200
Val Pro Glu Asp Lys Gly Gln Pro Gly Glu Asp Leu Arg Pro Ala Arg
            1205                1210                1215
Ala Ala Ala Arg Ala Leu
            1220


<210> 9
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<212> DNA
<213> homo sapiens

<220>
<221> CDS
<222> (1)...(3660)

<400> 9
atg gct cca ctc cgc gcg ctg ctg tcc tac ctg ctg cct ttg cac tgt    48
Met Ala Pro Leu Arg Ala Leu Leu Ser Tyr Leu Leu Pro Leu His Cys
1                   5                   10                  15

gcg ctc tgc rcc gcc gcg ggc agc cgg acc cca gag ctg cac ctc tct    96
Ala Leu Cys Xaa Ala Ala Gly Ser Arg Thr Pro Glu Leu His Leu Ser
                20                  25                  30

gga aag ctc agt gac tat ggt gtg aca gtg ccc tgc agc aca gac ttt   144
Gly Lys Leu Ser Asp Tyr Gly Val Thr Val Pro Cys Ser Thr Asp Phe
            35                  40                  45

cgg gga cgc ttc ctc tcc cac gtg gtg tct ggc cca gca gca gcc tct   192
Arg Gly Arg Phe Leu Ser His Val Val Ser Gly Pro Ala Ala Ala Ser
```

19

gca ggg agc atg gta gtg gac acg cca ccc aca cta cca cga cac tcc　　240
Ala Gly Ser Met Val Val Asp Thr Pro Pro Thr Leu Pro Arg His Ser
65　　　　　　　　　70　　　　　　　　　75　　　　　　　　　80

agt cac ctc cgg gtg gct cgc agc cct ctg cac cca gga ggg acc ctg　　288
Ser His Leu Arg Val Ala Arg Ser Pro Leu His Pro Gly Gly Thr Leu
　　　　　　　　85　　　　　　　　　90　　　　　　　　　95

tgg cct ggc agg gtg ggg cgc cac tcc ctc tac ttc aat gtc act gtt　　336
Trp Pro Gly Arg Val Gly Arg His Ser Leu Tyr Phe Asn Val Thr Val
　　　　　　　100　　　　　　　　105　　　　　　　　110

ttc ggg aag gaa ctg cac ttg cgc ctg cgg ccc aat cgg agg ttg gta　　384
Phe Gly Lys Glu Leu His Leu Arg Leu Arg Pro Asn Arg Arg Leu Val
　　　　　　　115　　　　　　　　120　　　　　　　　125

gtg cca gga tcc tca gtg gag tgg cag gag gat ttt cgg gag ctg ttc　　432
Val Pro Gly Ser Ser Val Glu Trp Gln Glu Asp Phe Arg Glu Leu Phe
　　　　　　　130　　　　　　　　135　　　　　　　　140

cgg cag ccc tta cgg cag gag tgt gtg tac act gga ggt gtc act gga　　480
Arg Gln Pro Leu Arg Gln Glu Cys Val Tyr Thr Gly Gly Val Thr Gly
145　　　　　　　　150　　　　　　　　155　　　　　　　　160

atg cct ggg gca gct gtt gcc atc agc aac tgt gac gga ttg gcg ggc　　528
Met Pro Gly Ala Ala Val Ala Ile Ser Asn Cys Asp Gly Leu Ala Gly
　　　　　　　165　　　　　　　　170　　　　　　　　175

ctc atc cgc aca gac agc acc gac ttc ttc att gag cct ctg gag cgg　　576
Leu Ile Arg Thr Asp Ser Thr Asp Phe Phe Ile Glu Pro Leu Glu Arg
　　　　　　　180　　　　　　　　185　　　　　　　　190

ggc cag cag gag aag gag gcc agc ggg agg aca cat gtg gtg tac cgc　　624
Gly Gln Gln Glu Lys Glu Ala Ser Gly Arg Thr His Val Val Tyr Arg
　　　　　　　195　　　　　　　　200　　　　　　　　205

cgg gag gcc gtc cag cag gag tgg gca gaa cct gac ggg gac ctg cac　　672
Arg Glu Ala Val Gln Gln Glu Trp Ala Glu Pro Asp Gly Asp Leu His
210　　　　　　　　215　　　　　　　　220

aat gaa gcc ttt ggc ctg gga gac ctt ccc aac ctg ctg ggc ctg gtg　　720
Asn Glu Ala Phe Gly Leu Gly Asp Leu Pro Asn Leu Leu Gly Leu Val
225　　　　　　　　230　　　　　　　　235　　　　　　　　240

ggg gac cag ctg ggc gac aca gag cgg aag cgg cgg cat gcc aag cca　　768
Gly Asp Gln Leu Gly Asp Thr Glu Arg Lys Arg Arg His Ala Lys Pro
　　　　　　　245　　　　　　　　250　　　　　　　　255

ggc agc tac agc atc gag gtg ctg ctg gtg gtg gac gac tcg gtg gtt　　816
Gly Ser Tyr Ser Ile Glu Val Leu Leu Val Val Asp Asp Ser Val Val
　　　　　　　260　　　　　　　　265　　　　　　　　270

cgc ttc cat ggc aag gag cat gtg cag aac tat gtc ctc acc ctc atg　　864
Arg Phe His Gly Lys Glu His Val Gln Asn Tyr Val Leu Thr Leu Met

20

```
aat atc gta gat gag att tac cac gat gag tcc ctg ggg gtt cat ata    912
Asn Ile Val Asp Glu Ile Tyr His Asp Glu Ser Leu Gly Val His Ile
    290                    295                    300

aat att gcc ctc gtc cgc ttg atc atg gtt ggc tac cga cag tcc ctg    960
Asn Ile Ala Leu Val Arg Leu Ile Met Val Gly Tyr Arg Gln Ser Leu
305                    310                    315                320

agc ctg atc gag cgc ggg aac ccc tca cgc agc ctg gag cag gtg tgt   1008
Ser Leu Ile Glu Arg Gly Asn Pro Ser Arg Ser Leu Glu Gln Val Cys
                   325                    330                    335

cgc tgg gca cac tcc cag cag cgc cag gac ccc agc cac gct gag cac   1056
Arg Trp Ala His Ser Gln Gln Arg Gln Asp Pro Ser His Ala Glu His
                340                    345                    350

cat gac cac gtt gtg ttc ctc acc cgg cag gac ttt ggg ccc tca ggg   1104
His Asp His Val Val Phe Leu Thr Arg Gln Asp Phe Gly Pro Ser Gly
                355                    360                    365

tat gca ccc swy wct ggc atg tgt cac ccc ctg agg agc tgt gcc ctc   1152
Tyr Ala Pro Xaa Xaa Gly Met Cys His Pro Leu Arg Ser Cys Ala Leu
                370                    375                    380

aac cat gag gat ggc ttc tcc tca gcc ttc gtg ata gct cat gag acc   1200
Asn His Glu Asp Gly Phe Ser Ser Ala Phe Val Ile Ala His Glu Thr
385                    390                    395                400

ggc cac gtg ctc ggc atg gag cat gac ggt cag ggg aat ggc tgt gca   1248
Gly His Val Leu Gly Met Glu His Asp Gly Gln Gly Asn Gly Cys Ala
                405                    410                    415

gat gag acc agc ctg ggc agc gtc atg gcg ccc ctg gtg cag gct gcc   1296
Asp Glu Thr Ser Leu Gly Ser Val Met Ala Pro Leu Val Gln Ala Ala
                420                    425                    430

ttc cac cgc ttc cat tgg tcc cgc tgc agc aag ctg gag ctc agc cgc   1344
Phe His Arg Phe His Trp Ser Arg Cys Ser Lys Leu Glu Leu Ser Arg
                435                    440                    445

tac ctc ccc tcc tac gac tgc ctc ctc gat gac ccc ttt gat cct gcc   1392
Tyr Leu Pro Ser Tyr Asp Cys Leu Leu Asp Asp Pro Phe Asp Pro Ala
    450                    455                    460

tgg ccc cag ccc cca gag ctg cct ggg atc aac tac tca atg gat gag   1440
Trp Pro Gln Pro Pro Glu Leu Pro Gly Ile Asn Tyr Ser Met Asp Glu
465                    470                    475                480

cag tgc cgc ttt gac ttt ggc agt ggc tac cag acc tgc ttg gca ttc   1488
Gln Cys Arg Phe Asp Phe Gly Ser Gly Tyr Gln Thr Cys Leu Ala Phe
                   485                    490                    495

agg acc ttt gag ccc tgc aag cag ctg tgg tgc agc cat cct gac aac   1536
Arg Thr Phe Glu Pro Cys Lys Gln Leu Trp Cys Ser His Pro Asp Asn
```

21

cmg tay ttc tgc aag acc aag aag ggg ccc ccg ctg gat ggg act gag   1584
Xaa Tyr Phe Cys Lys Thr Lys Lys Gly Pro Pro Leu Asp Gly Thr Glu
     515   520   525

tgt gca ccc ggc aag tgg tgc ttc aaa ggt cac tgc atc tgg aag tcg   1632
Cys Ala Pro Gly Lys Trp Cys Phe Lys Gly His Cys Ile Trp Lys Ser
     530   535   540

ccg gag cag aca tat ggc cag gat gga ggc tgg agc tcc tgg acc aag   1680
Pro Glu Gln Thr Tyr Gly Gln Asp Gly Gly Trp Ser Ser Trp Thr Lys
545   550   555   560

ttt ggg tca tgt tcg cgg tca tgt ggg ggc ggg gtg cga tcc cgc agc   1728
Phe Gly Ser Cys Ser Arg Ser Cys Gly Gly Gly Val Arg Ser Arg Ser
            565   570   575

cgg agc tgc aac aac ccc tcc cca gcc tat gga ggc cgc cyg tgc tta   1776
Arg Ser Cys Asn Asn Pro Ser Pro Ala Tyr Gly Gly Arg Xaa Cys Leu
            580   585   590

ggg ccc atg ttc gag tac cag gtc tgc aac agc gag gag tgc cct ggg   1824
Gly Pro Met Phe Glu Tyr Gln Val Cys Asn Ser Glu Glu Cys Pro Gly
            595   600   605

acc tac gag gac ttc cgg gcc cag cag tgt gcc aag cgc aac tcs tac   1872
Thr Tyr Glu Asp Phe Arg Ala Gln Gln Cys Ala Lys Arg Asn Xaa Tyr
     610   615   620

tat gtg cac cag aat gcc aag cac ags tgg gtg ccc tac gag cct gac   1920
Tyr Val His Gln Asn Ala Lys His Xaa Trp Val Pro Tyr Glu Pro Asp
625   630   635   640

gat gac gcc cag aag tgt gag ctg atc tgc cag tcg gcg gac acr ggg   1968
Asp Asp Ala Gln Lys Cys Glu Leu Ile Cys Gln Ser Ala Asp Xaa Gly
            645   650   655

gac gtg gtg ttc atg aac cag gtg gtt cac gat ggg aca cgc tgc agc   2016
Asp Val Val Phe Met Asn Gln Val Val His Asp Gly Thr Arg Cys Ser
            660   665   670

tac cgg gac cca tac agc gtc tgt gcg cgt ggc gag tgt gtg cct gtc   2064
Tyr Arg Asp Pro Tyr Ser Val Cys Ala Arg Gly Glu Cys Val Pro Val
            675   680   685

ggc tgt gac aag gag gtg ggg tcc atg aag gcg gat gac aag tgt gga   2112
Gly Cys Asp Lys Glu Val Gly Ser Met Lys Ala Asp Asp Lys Cys Gly
            690   695   700

gtc tgc ggg ggt gac aac tcc cac tgc agg act gtg aag ggg acg ctg   2160
Val Cys Gly Gly Asp Asn Ser His Cys Arg Thr Val Lys Gly Thr Leu
705   710   715   720

ggc aag gcc tcc aag cag gca gga gct ctc aag ctg gtg cag atc cca   2208
Gly Lys Ala Ser Lys Gln Ala Gly Ala Leu Lys Leu Val Gln Ile Pro

```
gca ggt gcc agg cac atc cag att gag gca ctg gag aag tcc ccc cac   2256
Ala Gly Ala Arg His Ile Gln Ile Glu Ala Leu Glu Lys Ser Pro His
            740                 745                 750

cgs wyw gtg gtg aag aac cag gtc acc ggc agc ttc atc ctc aac ccc   2304
Xaa Xaa Val Val Lys Asn Gln Val Thr Gly Ser Phe Ile Leu Asn Pro
            755                 760                 765

aag ggc aag gaa gcc aca agc cgg acc ttc acc gcc atg ggc ctg gag   2352
Lys Gly Lys Glu Ala Thr Ser Arg Thr Phe Thr Ala Met Gly Leu Glu
            770                 775                 780

tgg gag gat gcg gtg gag gat gcc aag gaa agc ctc aag acc agc ggg   2400
Trp Glu Asp Ala Val Glu Asp Ala Lys Glu Ser Leu Lys Thr Ser Gly
785             790                 795                 800

ccc ctg cct gaa gcc att gcc atc ctg gct ctc ccc cca act gag ggt   2448
Pro Leu Pro Glu Ala Ile Ala Ile Leu Ala Leu Pro Pro Thr Glu Gly
                805                 810                 815

ggc ccc cgc agc agc ctg gcc tac aag tac gtc atc cat gag gac ctg   2496
Gly Pro Arg Ser Ser Leu Ala Tyr Lys Tyr Val Ile His Glu Asp Leu
                820                 825                 830

ctg ccc ctt atc ggg agc aac aat gtg ctc ctg gag gag atg gac acc   2544
Leu Pro Leu Ile Gly Ser Asn Asn Val Leu Leu Glu Glu Met Asp Thr
                835                 840                 845

tat gag tgg gcg ctc aag agc tgg gcc ccc tgc agc aag gcc tgt gga   2592
Tyr Glu Trp Ala Leu Lys Ser Trp Ala Pro Cys Ser Lys Ala Cys Gly
            850                 855                 860

gga ggg atc cag ttc acc aaa tac ggc tgc cgg cgc aga cga gac cac   2640
Gly Gly Ile Gln Phe Thr Lys Tyr Gly Cys Arg Arg Arg Arg Asp His
865                 870                 875                 880

cac atg gtg cag cga cac ctg tgt gac cac aag aag agg ccc aag ccc   2688
His Met Val Gln Arg His Leu Cys Asp His Lys Lys Arg Pro Lys Pro
                885                 890                 895

atc cgc cgg cgc tgc aac cag cac ccg tgc tct cag cct gtg tgg gtg   2736
Ile Arg Arg Arg Cys Asn Gln His Pro Cys Ser Gln Pro Val Trp Val
            900                 905                 910

acg gag gag tgg ggt gcc tgc agc cgg agc tgt ggg aag ctg ggg gtg   2784
Thr Glu Glu Trp Gly Ala Cys Ser Arg Ser Cys Gly Lys Leu Gly Val
            915                 920                 925

cag aca cgg ggg ata cag tgc ctg ctg ccc ctc tcc aat gga acc cac   2832
Gln Thr Arg Gly Ile Gln Cys Leu Leu Pro Leu Ser Asn Gly Thr His
            930                 935                 940

aag gtc atg ccg gcc aaa gcc tgc gcc ggg gac cgg cct gag gcc cga   2880
Lys Val Met Pro Ala Lys Ala Cys Ala Gly Asp Arg Pro Glu Ala Arg
```

23

```
cgg ccc tgt ctc cga gtg ccc tgc cca gcc cag tgg agg ctg gga gcc    2928
Arg Pro Cys Leu Arg Val Pro Cys Pro Ala Gln Trp Arg Leu Gly Ala
            965              970              975

tgg tcc cag tgc tct gcc acc tgt gga gag ggc atc cag cag cgg cag    2976
Trp Ser Gln Cys Ser Ala Thr Cys Gly Glu Gly Ile Gln Gln Arg Gln
            980              985              990

gtg gtg tgc agg acc aac gcc aac agc ctc ggg cat tgc gag ggg gat    3024
Val Val Cys Arg Thr Asn Ala Asn Ser Leu Gly His Cys Glu Gly Asp
            995              1000             1005

agg cca gac act gtc cag gtc tgc arc ctg ccc gcc tgt gga gga aat    3072
Arg Pro Asp Thr Val Gln Val Cys Xaa Leu Pro Ala Cys Gly Gly Asn
    1010             1015             1020

cac cag aac tcc acg gtg agg gcc gat gtc tgg gaa ctt ggg acg cca    3120
His Gln Asn Ser Thr Val Arg Ala Asp Val Trp Glu Leu Gly Thr Pro
1025             1030             1035             1040

gag ggg cag tgg gtg cca caa tct gra ccc cta cat ccc att aac aag    3168
Glu Gly Gln Trp Val Pro Gln Ser Xaa Pro Leu His Pro Ile Asn Lys
            1045             1050             1055

ata tca tca acg gag ccc tgc acg gga gac agg tct gtc ttc tgc cag    3216
Ile Ser Ser Thr Glu Pro Cys Thr Gly Asp Arg Ser Val Phe Cys Gln
            1060             1065             1070

atg gaa gtg ctc gat cgc tac tgc tcc att ccc ggc tac cac cgg ctc    3264
Met Glu Val Leu Asp Arg Tyr Cys Ser Ile Pro Gly Tyr His Arg Leu
            1075             1080             1085

tgc tgt gtg tcc tgc atc aag aag gcc tcg ggc ccc aac cct ggc cca    3312
Cys Cys Val Ser Cys Ile Lys Lys Ala Ser Gly Pro Asn Pro Gly Pro
    1090             1095             1100

gac cct ggc cca acc tca ctg ccc ccc ttc tcc act cct gga agc ccc    3360
Asp Pro Gly Pro Thr Ser Leu Pro Pro Phe Ser Thr Pro Gly Ser Pro
1105             1110             1115             1120

tta cca gga ccc cag gac cct gca gat gct gca gag cct cct gga aag    3408
Leu Pro Gly Pro Gln Asp Pro Ala Asp Ala Ala Glu Pro Pro Gly Lys
            1125             1130             1135

cca acg gga tca gag gac cat cag cat ggc cga gcc aca cag ctc cca    3456
Pro Thr Gly Ser Glu Asp His Gln His Gly Arg Ala Thr Gln Leu Pro
            1140             1145             1150

gga gct ctg gat aca agc tcc cca ggg acc cag cat ccc ttt gcc cct    3504
Gly Ala Leu Asp Thr Ser Ser Pro Gly Thr Gln His Pro Phe Ala Pro
            1155             1160             1165

gag aca cca atc cct gga gca tcc tgg agc atc tcc cct acc acc ccc    3552
Glu Thr Pro Ile Pro Gly Ala Ser Trp Ser Ile Ser Pro Thr Thr Pro
```

24

```
ggg ggg ctg cct tgg ggc tgg act cag aca cct acg cca gtc cct gag   3600
Gly Gly Leu Pro Trp Gly Trp Thr Gln Thr Pro Thr Pro Val Pro Glu
1185                1190                1195                1200


gac aaa ggg caa cct gga gaa gac ctg aga cct gcc cgg gcg gcc gct   3648
Asp Lys Gly Gln Pro Gly Glu Asp Leu Arg Pro Ala Arg Ala Ala Ala
                1205                1210                1215


cga gcc cta tag                                                    3660
Arg Ala Leu  *
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<210> 10
<211> 1219
<212> PRT
<213> homo sapiens

<400> 10

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Met Ala Pro Leu Arg Ala Leu Leu Ser Tyr Leu Leu Pro Leu His Cys
1               5                   10                  15
Ala Leu Cys Thr Ala Ala Gly Ser Arg Thr Pro Glu Leu His Leu Ser
            20                  25                  30
Gly Lys Leu Ser Asp Tyr Gly Val Thr Val Pro Cys Ser Thr Asp Phe
        35                  40                  45
Arg Gly Arg Phe Leu Ser His Val Val Ser Gly Pro Ala Ala Ala Ser
    50                  55                  60
Ala Gly Ser Met Val Val Asp Thr Pro Pro Thr Leu Pro Arg His Ser
65                  70                  75                  80
Ser His Leu Arg Val Ala Arg Ser Pro Leu His Pro Gly Gly Thr Leu
                85                  90                  95
Trp Pro Gly Arg Val Gly Arg His Ser Leu Tyr Phe Asn Val Thr Val
            100                 105                 110
Phe Gly Lys Glu Leu His Leu Arg Leu Arg Pro Asn Arg Arg Leu Val
            115                 120                 125
Val Pro Gly Ser Ser Val Glu Trp Gln Glu Asp Phe Arg Glu Leu Phe
        130                 135                 140
Arg Gln Pro Leu Arg Gln Glu Cys Val Tyr Thr Gly Gly Val Thr Gly
145                 150                 155                 160
Met Pro Gly Ala Ala Val Ala Ile Ser Asn Cys Asp Gly Leu Ala Gly
            165                 170                 175
Leu Ile Arg Thr Asp Ser Thr Asp Phe Phe Ile Glu Pro Leu Glu Arg
            180                 185                 190
Gly Gln Gln Glu Lys Glu Ala Ser Gly Arg Thr His Val Val Tyr Arg
        195                 200                 205
Arg Glu Ala Val Gln Gln Glu Trp Ala Glu Pro Asp Gly Asp Leu His
    210                 215                 220
Asn Glu Ala Phe Gly Leu Gly Asp Leu Pro Asn Leu Leu Gly Leu Val
225                 230                 235                 240
Gly Asp Gln Leu Gly Asp Thr Glu Arg Lys Arg Arg His Ala Lys Pro
            245                 250                 255
Gly Ser Tyr Ser Ile Glu Val Leu Leu Val Val Asp Asp Ser Val Val
            260                 265                 270
Arg Phe His Gly Lys Glu His Val Gln Asn Tyr Val Leu Thr Leu Met
```

```
              275                    280                    285
Asn Ile Val Asp Glu Ile Tyr His Asp Glu Ser Leu Gly Val His Ile
    290                    295                    300
Asn Ile Ala Leu Val Arg Leu Ile Met Val Gly Tyr Arg Gln Ser Leu
305                    310                    315                    320
Ser Leu Ile Glu Arg Gly Asn Pro Ser Arg Ser Leu Glu Gln Val Cys
                   325                    330                    335
Arg Trp Ala His Ser Gln Gln Arg Gln Asp Pro Ser His Ala Glu His
                   340                    345                    350
His Asp His Val Val Phe Leu Thr Arg Gln Asp Phe Gly Pro Ser Gly
    355                    360                    365
Tyr Ala Pro Val Thr Gly Met Cys His Pro Leu Arg Ser Cys Ala Leu
    370                    375                    380
Asn His Glu Asp Gly Phe Ser Ser Ala Phe Val Ile Ala His Glu Thr
385                    390                    395                    400
Gly His Val Leu Gly Met Glu His Asp Gly Gln Gly Asn Gly Cys Ala
                   405                    410                    415
Asp Glu Thr Ser Leu Gly Ser Val Met Ala Pro Leu Val Gln Ala Ala
                   420                    425                    430
Phe His Arg Phe His Trp Ser Arg Cys Ser Lys Leu Glu Leu Ser Arg
    435                    440                    445
Tyr Leu Pro Ser Tyr Asp Cys Leu Leu Asp Asp Pro Phe Asp Pro Ala
    450                    455                    460
Trp Pro Gln Pro Pro Glu Leu Pro Gly Ile Asn Tyr Ser Met Asp Glu
465                    470                    475                    480
Gln Cys Arg Phe Asp Phe Gly Ser Gly Tyr Gln Thr Cys Leu Ala Phe
                   485                    490                    495
Arg Thr Phe Glu Pro Cys Lys Gln Leu Trp Cys Ser His Pro Asp Asn
                   500                    505                    510
Pro Tyr Phe Cys Lys Thr Lys Lys Gly Pro Pro Leu Asp Gly Thr Glu
                   515                    520                    525
Cys Ala Pro Gly Lys Trp Cys Phe Lys Gly His Cys Ile Trp Lys Ser
    530                    535                    540
Pro Glu Gln Thr Tyr Gly Gln Asp Gly Gly Trp Ser Ser Trp Thr Lys
545                    550                    555                    560
Phe Gly Ser Cys Ser Arg Ser Cys Gly Gly Gly Val Arg Ser Arg Ser
                   565                    570                    575
Arg Ser Cys Asn Asn Pro Ser Pro Ala Tyr Gly Gly Arg Pro Cys Leu
                   580                    585                    590
Gly Pro Met Phe Glu Tyr Gln Val Cys Asn Ser Glu Glu Cys Pro Gly
                   595                    600                    605
Thr Tyr Glu Asp Phe Arg Ala Gln Gln Cys Ala Lys Arg Asn Ser Tyr
    610                    615                    620
Tyr Val His Gln Asn Ala Lys His Ser Trp Val Pro Tyr Glu Pro Asp
625                    630                    635                    640
Asp Asp Ala Gln Lys Cys Glu Leu Ile Cys Gln Ser Ala Asp Thr Gly
                   645                    650                    655
Asp Val Val Phe Met Asn Gln Val Val His Asp Gly Thr Arg Cys Ser
                   660                    665                    670
Tyr Arg Asp Pro Tyr Ser Val Cys Ala Arg Gly Glu Cys Val Pro Val
    675                    680                    685
Gly Cys Asp Lys Glu Val Gly Ser Met Lys Ala Asp Asp Lys Cys Gly
    690                    695                    700
Val Cys Gly Gly Asp Asn Ser His Cys Arg Thr Val Lys Gly Thr Leu
705                    710                    715                    720
Gly Lys Ala Ser Lys Gln Ala Gly Ala Leu Lys Leu Val Gln Ile Pro
```

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```
                 725                     730                     735
    Ala Gly Ala Arg His Ile Gln Ile Glu Ala Leu Glu Lys Ser Pro His
             740                     745                     750
    Arg Ser Val Val Lys Asn Gln Val Thr Gly Ser Phe Ile Leu Asn Pro
         755                     760                     765
    Lys Gly Lys Glu Ala Thr Ser Arg Thr Phe Thr Ala Met Gly Leu Glu
     770                     775                     780
    Trp Glu Asp Ala Val Glu Asp Ala Lys Glu Ser Leu Lys Thr Ser Gly
 785                     790                     795                     800
    Pro Leu Pro Glu Ala Ile Ala Ile Leu Ala Leu Pro Pro Thr Glu Gly
             805                     810                     815
    Gly Pro Arg Ser Ser Leu Ala Tyr Lys Tyr Val Ile His Glu Asp Leu
             820                     825                     830
    Leu Pro Leu Ile Gly Ser Asn Asn Val Leu Leu Glu Glu Met Asp Thr
             835                     840                     845
    Tyr Glu Trp Ala Leu Lys Ser Trp Ala Pro Cys Ser Lys Ala Cys Gly
         850                     855                     860
    Gly Gly Ile Gln Phe Thr Lys Tyr Gly Cys Arg Arg Arg Arg Asp His
     865                     870                     875                     880
    His Met Val Gln Arg His Leu Cys Asp His Lys Lys Arg Pro Lys Pro
             885                     890                     895
    Ile Arg Arg Arg Cys Asn Gln His Pro Cys Ser Gln Pro Val Trp Val
             900                     905                     910
    Thr Glu Glu Trp Gly Ala Cys Ser Arg Ser Cys Gly Lys Leu Gly Val
         915                     920                     925
    Gln Thr Arg Gly Ile Gln Cys Leu Leu Pro Leu Ser Asn Gly Thr His
     930                     935                     940
    Lys Val Met Pro Ala Lys Ala Cys Ala Gly Asp Arg Pro Glu Ala Arg
 945                     950                     955                     960
    Arg Pro Cys Leu Arg Val Pro Cys Pro Ala Gln Trp Arg Leu Gly Ala
             965                     970                     975
    Trp Ser Gln Cys Ser Ala Thr Cys Gly Glu Gly Ile Gln Gln Arg Gln
             980                     985                     990
    Val Val Cys Arg Thr Asn Ala Asn Ser Leu Gly His Cys Glu Gly Asp
         995                     1000                    1005
    Arg Pro Asp Thr Val Gln Val Cys Ser Leu Pro Ala Cys Gly Gly Asn
     1010                    1015                    1020
    His Gln Asn Ser Thr Val Arg Ala Asp Val Trp Glu Leu Gly Thr Pro
 1025                    1030                    1035                    1040
    Glu Gly Gln Trp Val Pro Gln Ser Gly Pro Leu His Pro Ile Asn Lys
             1045                    1050                    1055
    Ile Ser Ser Thr Glu Pro Cys Thr Gly Asp Arg Ser Val Phe Cys Gln
             1060                    1065                    1070
    Met Glu Val Leu Asp Arg Tyr Cys Ser Ile Pro Gly Tyr His Arg Leu
             1075                    1080                    1085
    Cys Cys Val Ser Cys Ile Lys Lys Ala Ser Gly Pro Asn Pro Gly Pro
         1090                    1095                    1100
    Asp Pro Gly Pro Thr Ser Leu Pro Pro Phe Ser Thr Pro Gly Ser Pro
 1105                    1110                    1115                    1120
    Leu Pro Gly Pro Gln Asp Pro Ala Asp Ala Ala Glu Pro Pro Gly Lys
             1125                    1130                    1135
    Pro Thr Gly Ser Glu Asp His Gln His Gly Arg Ala Thr Gln Leu Pro
             1140                    1145                    1150
    Gly Ala Leu Asp Thr Ser Ser Pro Gly Thr Gln His Pro Phe Ala Pro
             1155                    1160                    1165
    Glu Thr Pro Ile Pro Gly Ala Ser Trp Ser Ile Ser Pro Thr Thr Pro
```

27

```
       1170                    1175                1180
Gly Gly Leu Pro Trp Gly Trp Thr Gln Thr Pro Thr Pro Val Pro Glu
1185                    1190                1195                1200
Asp Lys Gly Gln Pro Gly Glu Asp Leu Arg Pro Ala Arg Ala Ala Ala
                   1205                1210                1215
Arg Ala Leu


<210> 11
<211> 3651
<212> DNA
<213> homo sapiens

<220>
<221> CDS
<222> (1)...(3651)

<400> 11
atg gct cca ctc cgc gcg ctg ctg tcc tac ctg ctg cct ttg cac tgt    48
Met Ala Pro Leu Arg Ala Leu Leu Ser Tyr Leu Leu Pro Leu His Cys
1                   5                  10                  15

gcg ctc tgc rcc gcc gcg ggc agc cgg acc cca gag ctg cac ctc tct    96
Ala Leu Cys Xaa Ala Ala Gly Ser Arg Thr Pro Glu Leu His Leu Ser
                20                  25                  30

gga aag ctc agt gac tat ggt gtg aca gtg ccc tgc agc aca gac ttt   144
Gly Lys Leu Ser Asp Tyr Gly Val Thr Val Pro Cys Ser Thr Asp Phe
            35                  40                  45

cgg gga cgc ttc ctc tcc cac gtg gtg tct ggc cca gca gca gcc tct   192
Arg Gly Arg Phe Leu Ser His Val Val Ser Gly Pro Ala Ala Ala Ser
        50                  55                  60

gca ggg agc atg gta gtg gac acg cca ccc aca cta cca cga cac tcc   240
Ala Gly Ser Met Val Val Asp Thr Pro Pro Thr Leu Pro Arg His Ser
65                  70                  75                  80

agt cac ctc cgg gtg gct cgc agc cct ctg cac cca gga ggg acc ctg   288
Ser His Leu Arg Val Ala Arg Ser Pro Leu His Pro Gly Gly Thr Leu
                85                  90                  95

tgg cct ggc agg gtg ggg cgc cac tcc ctc tac ttc aat gtc act gtt   336
Trp Pro Gly Arg Val Gly Arg His Ser Leu Tyr Phe Asn Val Thr Val
            100                 105                 110

ttc ggg aag gaa ctg cac ttg cgc ctg cgg ccc aat cgg agg ttg gta   384
Phe Gly Lys Glu Leu His Leu Arg Leu Arg Pro Asn Arg Arg Leu Val
            115                 120                 125

gtg cca gga tcc tca gtg gag tgg cag gag gat ttt cgg gag ctg ttc   432
Val Pro Gly Ser Ser Val Glu Trp Gln Glu Asp Phe Arg Glu Leu Phe
        130                 135                 140

cgg cag ccc tta cgg cag gag tgt gtg tac act gga ggt gtc act gga   480
```

                                       28

```
Arg Gln Pro Leu Arg Gln Glu Cys Val Tyr Thr Gly Gly Val Thr Gly
145             150             155                     160

atg cct ggg gca gct gtt gcc atc agc aac tgt gac gga ttg gcg ggc    528
Met Pro Gly Ala Ala Val Ala Ile Ser Asn Cys Asp Gly Leu Ala Gly
                165             170             175

ctc atc cgc aca gac agc acc gac ttc ttc att gag cct ctg gag cgg    576
Leu Ile Arg Thr Asp Ser Thr Asp Phe Phe Ile Glu Pro Leu Glu Arg
            180             185             190

ggc cag cag gag aag gag gcc agc ggg agg aca cat gtg gtg tac cgc    624
Gly Gln Gln Glu Lys Glu Ala Ser Gly Arg Thr His Val Val Tyr Arg
        195             200             205

cgg gag gcc gtc cag cag gag tgg gca gaa cct gac ggg gac ctg cac    672
Arg Glu Ala Val Gln Gln Glu Trp Ala Glu Pro Asp Gly Asp Leu His
    210             215             220

aat gaa gcc ttt ggc ctg gga gac ctt ccc aac ctg ctg ggc ctg gtg    720
Asn Glu Ala Phe Gly Leu Gly Asp Leu Pro Asn Leu Leu Gly Leu Val
225             230             235             240

ggg gac cag ctg ggc gac aca gag cgg aag cgg cgg cat gcc aag cca    768
Gly Asp Gln Leu Gly Asp Thr Glu Arg Lys Arg Arg His Ala Lys Pro
            245             250             255

ggc agc tac agc atc gag gtg ctg ctg gtg gtg gac gac tcg gtg gtt    816
Gly Ser Tyr Ser Ile Glu Val Leu Leu Val Val Asp Asp Ser Val Val
            260             265             270

cgc ttc cat ggc aag gag cat gtg cag aac tat gtc ctc acc ctc atg    864
Arg Phe His Gly Lys Glu His Val Gln Asn Tyr Val Leu Thr Leu Met
        275             280             285

aat atc gta gat gag att tac cac gat gag tcc ctg ggg gtt cat ata    912
Asn Ile Val Asp Glu Ile Tyr His Asp Glu Ser Leu Gly Val His Ile
    290             295             300

aat att gcc ctc gtc cgc ttg atc atg gtt ggc tac cga cag tcc ctg    960
Asn Ile Ala Leu Val Arg Leu Ile Met Val Gly Tyr Arg Gln Ser Leu
305             310             315             320

agc ctg atc gag cgc ggg aac ccc tca cgc agc ctg gag cag gtg tgt   1008
Ser Leu Ile Glu Arg Gly Asn Pro Ser Arg Ser Leu Glu Gln Val Cys
            325             330             335

cgc tgg gca cac tcc cag cag cgc cag gac ccc agc cac gct gag cac   1056
Arg Trp Ala His Ser Gln Gln Arg Gln Asp Pro Ser His Ala Glu His
        340             345             350

cat gac cac gtt gtg ttc ctc acc cgg cag gac ttt ggg ccc tca ggg   1104
His Asp His Val Val Phe Leu Thr Arg Gln Asp Phe Gly Pro Ser Gly
        355             360             365

tat gca ccc gtc act ggc atg tgt cac ccc ctg agg agc tgt gcc ctc   1152
```

29

```
    Tyr Ala Pro Val Thr Gly Met Cys His Pro Leu Arg Ser Cys Ala Leu
        370                 375                 380

    aac cat gag gat ggc ttc tcc tca gcc ttc gtg ata gct cat gag acc   1200
    Asn His Glu Asp Gly Phe Ser Ser Ala Phe Val Ile Ala His Glu Thr
    385                 390                 395                 400

    ggc cac gtg ctc ggc atg gag cat gac ggt cag ggg aat ggc tgt gca   1248
    Gly His Val Leu Gly Met Glu His Asp Gly Gln Gly Asn Gly Cys Ala
                        405                 410                 415

    gat gag acc agc ctg ggc agc gtc atg gcg ccc ctg gtg cag gct gcc   1296
    Asp Glu Thr Ser Leu Gly Ser Val Met Ala Pro Leu Val Gln Ala Ala
                    420                 425                 430

    ttc cac cgc ttc cat tgg tcc cgc tgc agc aag ctg gag ctc agc cgc   1344
    Phe His Arg Phe His Trp Ser Arg Cys Ser Lys Leu Glu Leu Ser Arg
                435                 440                 445

    tac ctc ccc tcc tac gac tgc ctc ctc gat gac ccc ttt gat cct gcc   1392
    Tyr Leu Pro Ser Tyr Asp Cys Leu Leu Asp Asp Pro Phe Asp Pro Ala
        450                 455                 460

    tgg ccc cag ccc cca gag ctg cct ggg atc aac tac tca atg gat gag   1440
    Trp Pro Gln Pro Pro Glu Leu Pro Gly Ile Asn Tyr Ser Met Asp Glu
    465                 470                 475                 480

    cag tgc cgc ttt gac ttt ggc agt ggc tac cag acc tgc ttg gca ttc   1488
    Gln Cys Arg Phe Asp Phe Gly Ser Gly Tyr Gln Thr Cys Leu Ala Phe
                        485                 490                 495

    agg acc ttt gag ccc tgc aag cag ctg tgg tgc agc cat cct gac aac   1536
    Arg Thr Phe Glu Pro Cys Lys Gln Leu Trp Cys Ser His Pro Asp Asn
                        500                 505                 510

    cmg tay ttc tgc aag acc aag aag ggg ccc ccg ctg gat ggg act gag   1584
    Xaa Tyr Phe Cys Lys Thr Lys Lys Gly Pro Pro Leu Asp Gly Thr Glu
                515                 520                 525

    tgt gca ccc ggc aag tgg tgc ttc aaa ggt cac tgc atc tgg aag tcg   1632
    Cys Ala Pro Gly Lys Trp Cys Phe Lys Gly His Cys Ile Trp Lys Ser
        530                 535                 540

    ccg gag cag aca tat ggc cag gat gga ggc tgg agc tcc tgg acc aag   1680
    Pro Glu Gln Thr Tyr Gly Gln Asp Gly Gly Trp Ser Ser Trp Thr Lys
    545                 550                 555                 560

    ttt ggg tca tgt tcg cgg tca tgt ggg ggc ggg gtg cga tcc cgc agc   1728
    Phe Gly Ser Cys Ser Arg Ser Cys Gly Gly Gly Val Arg Ser Arg Ser
                        565                 570                 575

    cgg agc tgc aac aac ccc tcc cca gcc tat gga ggc cgc cyg tgc tta   1776
    Arg Ser Cys Asn Asn Pro Ser Pro Ala Tyr Gly Gly Arg Xaa Cys Leu
                580                 585                 590

    ggg ccc atg ttc gag tac cag gtc tgc aac agc gag gag tgc cct ggg   1824
```

30

```
            Gly Pro Met Phe Glu Tyr Gln Val Cys Asn Ser Glu Glu Cys Pro Gly
                595                 600                 605

            acc tac gag gac ttc cgg gcc cag cag tgt gcc aag cgc aac tcs tac   1872
            Thr Tyr Glu Asp Phe Arg Ala Gln Gln Cys Ala Lys Arg Asn Xaa Tyr
                610                 615                 620

            tat gtg cac cag aat gcc aag cac ags tgg gtg ccc tac gag cct gac   1920
            Tyr Val His Gln Asn Ala Lys His Xaa Trp Val Pro Tyr Glu Pro Asp
            625                 630                 635                 640

            gat gac gcc cag aag tgt gag ctg atc tgc cag tcg gcg gac acr ggg   1968
            Asp Asp Ala Gln Lys Cys Glu Leu Ile Cys Gln Ser Ala Asp Xaa Gly
                            645                 650                 655

            gac gtg gtg ttc atg aac cag gtg gtt cac gat ggg aca cgc tgc agc   2016
            Asp Val Val Phe Met Asn Gln Val Val His Asp Gly Thr Arg Cys Ser
                        660                 665                 670

            tac cgg gac cca tac agc gtc tgt gcg cgt ggc gag tgt gtg cct gtc   2064
            Tyr Arg Asp Pro Tyr Ser Val Cys Ala Arg Gly Glu Cys Val Pro Val
                    675                 680                 685

            ggc tgt gac aag gag gtg ggg tcc atg aag gcg gat gac aag tgt gga   2112
            Gly Cys Asp Lys Glu Val Gly Ser Met Lys Ala Asp Asp Lys Cys Gly
                690                 695                 700

            gtc tgc ggg ggt gac aac tcc cac tgc agg act gtg aag ggg acg ctg   2160
            Val Cys Gly Gly Asp Asn Ser His Cys Arg Thr Val Lys Gly Thr Leu
            705                 710                 715                 720

            ggc aag gcc tcc aag cag gca gga gct ctc aag ctg gtg cag atc cca   2208
            Gly Lys Ala Ser Lys Gln Ala Gly Ala Leu Lys Leu Val Gln Ile Pro
                            725                 730                 735

            gca ggt gcc agg cac atc cag att gag gca ctg gag aag tcc ccc cac   2256
            Ala Gly Ala Arg His Ile Gln Ile Glu Ala Leu Glu Lys Ser Pro His
                        740                 745                 750

            cgs wyw gtg gtg aag aac cag gtc acc ggc agc ttc atc ctc aac ccc   2304
            Xaa Xaa Val Val Lys Asn Gln Val Thr Gly Ser Phe Ile Leu Asn Pro
                    755                 760                 765

            aag ggc aag gaa gcc aca agc cgg acc ttc acc gcc atg ggc ctg gag   2352
            Lys Gly Lys Glu Ala Thr Ser Arg Thr Phe Thr Ala Met Gly Leu Glu
                770                 775                 780

            tgg gag gat gcg gtg gag gat gcc aag gaa agc ctc aag acc agc ggg   2400
            Trp Glu Asp Ala Val Glu Asp Ala Lys Glu Ser Leu Lys Thr Ser Gly
            785                 790                 795                 800

            ccc ctg cct gaa gcc att gcc atc ctg gct ctc ccc cca act gag ggt   2448
            Pro Leu Pro Glu Ala Ile Ala Ile Leu Ala Leu Pro Pro Thr Glu Gly
                            805                 810                 815

            ggc ccc cgc agc agc ctg gcc tac aag tac gtc atc cat gag gac ctg   2496
```

31

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              Gly Pro Arg Ser Ser Leu Ala Tyr Lys Tyr Val Ile His Glu Asp Leu
                      820                 825                 830

ctg ccc ctt atc ggg agc aac aat gtg ctc ctg gag gag atg gac acc    2544
Leu Pro Leu Ile Gly Ser Asn Asn Val Leu Leu Glu Glu Met Asp Thr
        835                 840                 845

tat gag tgg gcg ctc aag agc tgg gcc ccc tgc agc aag gcc tgt gga    2592
Tyr Glu Trp Ala Leu Lys Ser Trp Ala Pro Cys Ser Lys Ala Cys Gly
        850                 855                 860

gga ggg atc cag ttc acc aaa tac ggc tgc cgg cgc aga cga gac cac    2640
Gly Gly Ile Gln Phe Thr Lys Tyr Gly Cys Arg Arg Arg Arg Asp His
865                 870                 875                 880

cac atg gtg cag cga cac ctg tgt gac cac aag aag agg ccc aag ccc    2688
His Met Val Gln Arg His Leu Cys Asp His Lys Lys Arg Pro Lys Pro
                    885                 890                 895

atc cgc cgg cgc tgc aac cag cac ccg tgc tct cag cct gtg tgg gtg    2736
Ile Arg Arg Arg Cys Asn Gln His Pro Cys Ser Gln Pro Val Trp Val
                    900                 905                 910

acg gag gag tgg ggt gcc tgc agc cgg agc tgt ggg aag ctg ggg gtg    2784
Thr Glu Glu Trp Gly Ala Cys Ser Arg Ser Cys Gly Lys Leu Gly Val
            915                 920                 925

cag aca cgg ggg ata cag tgc ctg ctg ccc ctc tcc aat gga acc cac    2832
Gln Thr Arg Gly Ile Gln Cys Leu Leu Pro Leu Ser Asn Gly Thr His
        930                 935                 940

aag gtc atg ccg gcc aaa gcc tgc gcc ggg gac cgg cct gag gcc cga    2880
Lys Val Met Pro Ala Lys Ala Cys Ala Gly Asp Arg Pro Glu Ala Arg
945                 950                 955                 960

cgg ccc tgt ctc cga gtg ccc tgc cca gcc cag tgg agg ctg gga gcc    2928
Arg Pro Cys Leu Arg Val Pro Cys Pro Ala Gln Trp Arg Leu Gly Ala
                965                 970                 975

tgg tcc cag tgc tct gcc acc tgt gga gag ggc atc cag cag cgg cag    2976
Trp Ser Gln Cys Ser Ala Thr Cys Gly Glu Gly Ile Gln Gln Arg Gln
            980                 985                 990

gtg gtg tgc agg acc aac gcc aac agc ctc ggg cat tgc gag ggg gat    3024
Val Val Cys Arg Thr Asn Ala Asn Ser Leu Gly His Cys Glu Gly Asp
            995                 1000                1005

agg cca gac act gtc cag gtc tgc arc ctg ccc gcc tgt gga gga aat    3072
Arg Pro Asp Thr Val Gln Val Cys Xaa Leu Pro Ala Cys Gly Gly Asn
        1010                1015                1020

cac cag aac tcc acg gtg agg gcc gat gtc tgg gaa ctt ggg acg cca    3120
His Gln Asn Ser Thr Val Arg Ala Asp Val Trp Glu Leu Gly Thr Pro
1025                1030                1035                1040

gag ggg cag tgg gtg cca caa tct gra ccc cta cat ccc att aac aag    3168
```

32

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Glu Gly Gln Trp Val Pro Gln Ser Xaa Pro Leu His Pro Ile Asn Lys
         1045              1050              1055

ata tca tca atg tgt gca gcg gag ccc tgc acg gga gac agg tct gtc   3216
Ile Ser Ser Met Cys Ala Ala Glu Pro Cys Thr Gly Asp Arg Ser Val
             1060              1065              1070

ttc tgc cag atg gaa gtg ctc gat cgc tac tgc tcc att ccc ggc tac   3264
Phe Cys Gln Met Glu Val Leu Asp Arg Tyr Cys Ser Ile Pro Gly Tyr
         1075              1080              1085

cac cgg ctc tgc tgt gtg tcc tgc atc aag aag gcc tcg ggc ccc aac   3312
His Arg Leu Cys Cys Val Ser Cys Ile Lys Lys Ala Ser Gly Pro Asn
         1090              1095              1100

cct ggc cca gac cct ggc cca acc tca ctg ccc ccc ttc tcc act cct   3360
Pro Gly Pro Asp Pro Gly Pro Thr Ser Leu Pro Pro Phe Ser Thr Pro
1105              1110              1115              1120

gga agc ccc tta cca gga ccc cag gac cct gca gat gct gca gag cct   3408
Gly Ser Pro Leu Pro Gly Pro Gln Asp Pro Ala Asp Ala Ala Glu Pro
             1125              1130              1135

cct gga aag cca acg gga tca gag gac cat cag cat ggc cga gcc aca   3456
Pro Gly Lys Pro Thr Gly Ser Glu Asp His Gln His Gly Arg Ala Thr
             1140              1145              1150

cag ctc cca gga gct ctg gat aca agc tcc cca ggg acc cag cat ccc   3504
Gln Leu Pro Gly Ala Leu Asp Thr Ser Ser Pro Gly Thr Gln His Pro
         1155              1160              1165

ttt gcc cct gag aca cca atc cct gga gca tcc tgg agc atc tcc cct   3552
Phe Ala Pro Glu Thr Pro Ile Pro Gly Ala Ser Trp Ser Ile Ser Pro
    1170              1175              1180

acc acc ccc ggg ggg ctg cct tgg ggc tgg act cag aca cct acg cca   3600
Thr Thr Pro Gly Gly Leu Pro Trp Gly Trp Thr Gln Thr Pro Thr Pro
1185              1190              1195              1200

gtc cct gac ctg ccc ggg cgg ccg ctc gag ccc tat agt gag tcg tat   3648
Val Pro Asp Leu Pro Gly Arg Pro Leu Glu Pro Tyr Ser Glu Ser Tyr
         1205              1210              1215

tag                                                               3651
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<210> 12
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<212> PRT
<213> homo sapiens

<400> 12
Met Ala Pro Leu Arg Ala Leu Leu Ser Tyr Leu Leu Pro Leu His Cys
1               5                   10                  15
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33

Ala Leu Cys Thr Ala Ala Gly Ser Arg Thr Pro Glu Leu His Leu Ser
      20   25   30

Gly Lys Leu Ser Asp Tyr Gly Val Thr Val Pro Cys Ser Thr Asp Phe
      35   40   45

Arg Gly Arg Phe Leu Ser His Val Val Ser Gly Pro Ala Ala Ala Ser
   50   55   60

Ala Gly Ser Met Val Val Asp Thr Pro Pro Thr Leu Pro Arg His Ser
65   70   75   80

Ser His Leu Arg Val Ala Arg Ser Pro Leu His Pro Gly Gly Thr Leu
          85   90   95

Trp Pro Gly Arg Val Gly Arg His Ser Leu Tyr Phe Asn Val Thr Val
      100   105   110

Phe Gly Lys Glu Leu His Leu Arg Leu Arg Pro Asn Arg Arg Leu Val
      115   120   125

Val Pro Gly Ser Ser Val Glu Trp Gln Glu Asp Phe Arg Glu Leu Phe
   130   135   140

Arg Gln Pro Leu Arg Gln Glu Cys Val Tyr Thr Gly Gly Val Thr Gly
145   150   155   160

Met Pro Gly Ala Ala Val Ala Ile Ser Asn Cys Asp Gly Leu Ala Gly
      165   170   175

Leu Ile Arg Thr Asp Ser Thr Asp Phe Phe Ile Glu Pro Leu Glu Arg
      180   185   190

Gly Gln Gln Glu Lys Glu Ala Ser Gly Arg Thr His Val Val Tyr Arg
      195   200   205

Arg Glu Ala Val Gln Gln Glu Trp Ala Glu Pro Asp Gly Asp Leu·His
   210   215   220

Asn Glu Ala Phe Gly Leu Gly Asp Leu Pro Asn Leu Leu Gly Leu Val
225   230   235   240

Gly Asp Gln Leu Gly Asp Thr Glu Arg Lys Arg Arg His Ala Lys Pro
      245   250   255

Gly Ser Tyr Ser Ile Glu Val Leu Leu Val Val Asp Asp Ser Val Val
      260   265   270

Arg Phe His Gly Lys Glu His Val Gln Asn Tyr Val Leu Thr Leu Met
   275   280   285

Asn Ile Val Asp Glu Ile Tyr His Asp Glu Ser Leu Gly Val His Ile
   290   295   300

Asn Ile Ala Leu Val Arg Leu Ile Met Val Gly Tyr Arg Gln Ser Leu
305   310   315   320

Ser Leu Ile Glu Arg Gly Asn Pro Ser Arg Ser Leu Glu Gln Val Cys
      325   330   335

Arg Trp Ala His Ser Gln Gln Arg Gln Asp Pro Ser His Ala Glu His
      340   345   350

His Asp His Val Val Phe Leu Thr Arg Gln Asp Phe Gly Pro Ser Gly
      355   360   365

Tyr Ala Pro Val Thr Gly Met Cys His Pro Leu Arg Ser Cys Ala Leu
   370   375   380

Asn His Glu Asp Gly Phe Ser Ser Ala Phe Val Ile Ala His Glu Thr
385   390   395   400

Gly His Val Leu Gly Met Glu His Asp Gly Gln Gly Asn Gly Cys Ala
            405   410   415

Asp Glu Thr Ser Leu Gly Ser Val Met Ala Pro Leu Val Gln Ala Ala
      420   425   430

Phe His Arg Phe His Trp Ser Arg Cys Ser Lys Leu Glu Leu Ser Arg
      435   440   445

Tyr Leu Pro Ser Tyr Asp Cys Leu Leu Asp Asp Pro Phe Asp Pro Ala
   450   455   460

```
Trp Pro Gln Pro Pro Glu Leu Pro Gly Ile Asn Tyr Ser Met Asp Glu
465             470             475                 480
Gln Cys Arg Phe Asp Phe Gly Ser Gly Tyr Gln Thr Cys Leu Ala Phe
            485             490                 495
Arg Thr Phe Glu Pro Cys Lys Gln Leu Trp Cys Ser His Pro Asp Asn
            500             505                 510
Pro Tyr Phe Cys Lys Thr Lys Lys Gly Pro Pro Leu Asp Gly Thr Glu
        515             520                 525
Cys Ala Pro Gly Lys Trp Cys Phe Lys Gly His Cys Ile Trp Lys Ser
    530             535                 540
Pro Glu Gln Thr Tyr Gly Gln Asp Gly Gly Trp Ser Ser Trp Thr Lys
545             550                 555                 560
Phe Gly Ser Cys Ser Arg Ser Cys Gly Gly Gly Val Arg Ser Arg Ser
            565             570                 575
Arg Ser Cys Asn Asn Pro Ser Pro Ala Tyr Gly Gly Arg Pro Cys Leu
            580             585                 590
Gly Pro Met Phe Glu Tyr Gln Val Cys Asn Ser Glu Glu Cys Pro Gly
        595             600                 605
Thr Tyr Glu Asp Phe Arg Ala Gln Gln Cys Ala Lys Arg Asn Ser Tyr
    610             615                 620
Tyr Val His Gln Asn Ala Lys His Ser Trp Val Pro Tyr Glu Pro Asp
625             630                 635                 640
Asp Asp Ala Gln Lys Cys Glu Leu Ile Cys Gln Ser Ala Asp Thr Gly
            645             650                 655
Asp Val Val Phe Met Asn Gln Val Val His Asp Gly Thr Arg Cys Ser
            660             665                 670
Tyr Arg Asp Pro Tyr Ser Val Cys Ala Arg Gly Glu Cys Val Pro Val
        675             680                 685
Gly Cys Asp Lys Glu Val Gly Ser Met Lys Ala Asp Asp Lys Cys Gly
    690             695                 700
Val Cys Gly Gly Asp Asn Ser His Cys Arg Thr Val Lys Gly Thr Leu
705             710                 715                 720
Gly Lys Ala Ser Lys Gln Ala Gly Ala Leu Lys Leu Val Gln Ile Pro
            725             730                 735
Ala Gly Ala Arg His Ile Gln Ile Glu Ala Leu Glu Lys Ser Pro His
            740             745                 750
Arg Ser Val Val Lys Asn Gln Val Thr Gly Ser Phe Ile Leu Asn Pro
            755             760                 765
Lys Gly Lys Glu Ala Thr Ser Arg Thr Phe Thr Ala Met Gly Leu Glu
    770             775                 780
Trp Glu Asp Ala Val Glu Asp Ala Lys Glu Ser Leu Lys Thr Ser Gly
785             790                 795                 800
Pro Leu Pro Glu Ala Ile Ala Ile Leu Ala Leu Pro Pro Thr Glu Gly
            805             810                 815
Gly Pro Arg Ser Ser Leu Ala Tyr Lys Tyr Val Ile His Glu Asp Leu
        820             825                 830
Leu Pro Leu Ile Gly Ser Asn Asn Val Leu Leu Glu Glu Met Asp Thr
    835             840                 845
Tyr Glu Trp Ala Leu Lys Ser Trp Ala Pro Cys Ser Lys Ala Cys Gly
    850             855                 860
Gly Gly Ile Gln Phe Thr Lys Tyr Gly Cys Arg Arg Arg Arg Asp His
865             870                 875                 880
His Met Val Gln Arg His Leu Cys Asp His Lys Lys Arg Pro Lys Pro
            885             890                 895
Ile Arg Arg Arg Cys Asn Gln His Pro Cys Ser Gln Pro Val Trp Val
        900             905                 910
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35

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Thr Glu Glu Trp Gly Ala Cys Ser Arg Ser Cys Gly Lys Leu Gly Val
        915                 920                 925
Gln Thr Arg Gly Ile Gln Cys Leu Leu Pro Leu Ser Asn Gly Thr His
        930                 935                 940
Lys Val Met Pro Ala Lys Ala Cys Ala Gly Asp Arg Pro Glu Ala Arg
945                 950                 955                 960
Arg Pro Cys Leu Arg Val Pro Cys Pro Ala Gln Trp Arg Leu Gly Ala
                965                 970                 975
Trp Ser Gln Cys Ser Ala Thr Cys Gly Glu Gly Ile Gln Gln Arg Gln
                980                 985                 990
Val Val Cys Arg Thr Asn Ala Asn Ser Leu Gly His Cys Glu Gly Asp
            995                 1000                1005
Arg Pro Asp Thr Val Gln Val Cys Ser Leu Pro Ala Cys Gly Gly Asn
        1010                1015                1020
His Gln Asn Ser Thr Val Arg Ala Asp Val Trp Glu Leu Gly Thr Pro
1025                1030                1035                1040
Glu Gly Gln Trp Val Pro Gln Ser Gly Pro Leu His Pro Ile Asn Lys
                1045                1050                1055
Ile Ser Ser Met Cys Ala Ala Glu Pro Cys Thr Gly Asp Arg Ser Val
                1060                1065                1070
Phe Cys Gln Met Glu Val Leu Asp Arg Tyr Cys Ser Ile Pro Gly Tyr
                1075                1080                1085
His Arg Leu Cys Cys Val Ser Cys Ile Lys Lys Ala Ser Gly Pro Asn
        1090                1095                1100
Pro Gly Pro Asp Pro Gly Pro Thr Ser Leu Pro Pro Phe Ser Thr Pro
1105                1110                1115                1120
Gly Ser Pro Leu Pro Gly Pro Gln Asp Pro Ala Asp Ala Ala Glu Pro
                1125                1130                1135
Pro Gly Lys Pro Thr Gly Ser Glu Asp His Gln His Gly Arg Ala Thr
                1140                1145                1150
Gln Leu Pro Gly Ala Leu Asp Thr Ser Ser Pro Gly Thr Gln His Pro
        1155                1160                1165
Phe Ala Pro Glu Thr Pro Ile Pro Gly Ala Ser Trp Ser Ile Ser Pro
        1170                1175                1180
Thr Thr Pro Gly Gly Leu Pro Trp Gly Trp Thr Gln Thr Pro Thr Pro
1185                1190                1195                1200
Val Pro Asp Leu Pro Gly Arg Pro Leu Glu Pro Tyr Ser Glu Ser Tyr
                1205                1210                1215


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<212> DNA
<213> homo sapiens

<220>
<221> CDS
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<400> 13
atg gct cca ctc cgc gcg ctg ctg tcc tac ctg ctg cct ttg cac tgt    48
Met Ala Pro Leu Arg Ala Leu Leu Ser Tyr Leu Leu Pro Leu His Cys
 1               5                   10                  15

gcg ctc tgc rcc gcc gcg ggc agc cgg acc cca gag ctg cac ctc tct    96
Ala Leu Cys Xaa Ala Ala Gly Ser Arg Thr Pro Glu Leu His Leu Ser
```

36

```
gga aag ctc agt gac tat ggt gtg aca gtg ccc tgc agc aca gac ttt    144
Gly Lys Leu Ser Asp Tyr Gly Val Thr Val Pro Cys Ser Thr Asp Phe
         35              40              45

cgg gga cgc ttc ctc tcc cac gtg gtg tct ggc cca gca gca gcc tct    192
Arg Gly Arg Phe Leu Ser His Val Val Ser Gly Pro Ala Ala Ala Ser
     50              55              60

gca ggg agc atg gta gtg gac acg cca ccc aca cta cca cga cac tcc    240
Ala Gly Ser Met Val Val Asp Thr Pro Pro Thr Leu Pro Arg His Ser
 65              70              75              80

agt cac ctc cgg gtg gct cgc agc cct ctg cac cca gga ggg acc ctg    288
Ser His Leu Arg Val Ala Arg Ser Pro Leu His Pro Gly Gly Thr Leu
             85              90              95

tgg cct ggc agg gtg ggg cgc cac tcc ctc tac ttc aat gtc act gtt    336
Trp Pro Gly Arg Val Gly Arg His Ser Leu Tyr Phe Asn Val Thr Val
             100             105             110

ttc ggg aag gaa ctg cac ttg cgc ctg cgg ccc aat cgg agg ttg gta    384
Phe Gly Lys Glu Leu His Leu Arg Leu Arg Pro Asn Arg Arg Leu Val
             115             120             125

gtg cca gga tcc tca gtg gag tgg cag gag gat ttt cgg gag ctg ttc    432
Val Pro Gly Ser Ser Val Glu Trp Gln Glu Asp Phe Arg Glu Leu Phe
     130             135             140

cgg cag ccc tta cgg cag gag tgt gtg tac act gga ggt gtc act gga    480
Arg Gln Pro Leu Arg Gln Glu Cys Val Tyr Thr Gly Gly Val Thr Gly
145             150             155             160

atg cct ggg gca gct gtt gcc atc agc aac tgt gac gga ttg gcg ggc    528
Met Pro Gly Ala Ala Val Ala Ile Ser Asn Cys Asp Gly Leu Ala Gly
             165             170             175

ctc atc cgc aca gac agc acc gac ttc ttc att gag cct ctg gag cgg    576
Leu Ile Arg Thr Asp Ser Thr Asp Phe Phe Ile Glu Pro Leu Glu Arg
             180             185             190

ggc cag cag gag aag gag gcc agc ggg agg aca cat gtg gtg tac cgc    624
Gly Gln Gln Glu Lys Glu Ala Ser Gly Arg Thr His Val Val Tyr Arg
             195             200             205

cgg gag gcc gtc cag cag gag tgg gca gaa cct gac ggg gac ctg cac    672
Arg Glu Ala Val Gln Gln Glu Trp Ala Glu Pro Asp Gly Asp Leu His
     210             215             220

aat gaa gcc ttt ggc ctg gga gac ctt ccc aac ctg ctg ggc ctg gtg    720
Asn Glu Ala Phe Gly Leu Gly Asp Leu Pro Asn Leu Leu Gly Leu Val
225             230             235             240

ggg gac cag ctg ggc gac aca gag cgg aag cgg cgg cat gcc aag cca    768
Gly Asp Gln Leu Gly Asp Thr Glu Arg Lys Arg Arg His Ala Lys Pro
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37

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ggc agc tac agc atc gag gtg ctg ctg gtg gtg gac gac tcg gtg gtt     816
Gly Ser Tyr Ser Ile Glu Val Leu Leu Val Val Asp Asp Ser Val Val
            260                 265                 270

cgc ttc cat ggc aag gag cat gtg cag aac tat gtc ctc acc ctc atg     864
Arg Phe His Gly Lys Glu His Val Gln Asn Tyr Val Leu Thr Leu Met
            275                 280                 285

aat atc gta gat gag att tac cac gat gag tcc ctg ggg gtt cat ata     912
Asn Ile Val Asp Glu Ile Tyr His Asp Glu Ser Leu Gly Val His Ile
    290                 295                 300

aat att gcc ctc gtc cgc ttg atc atg gtt ggc tac cga cag tcc ctg     960
Asn Ile Ala Leu Val Arg Leu Ile Met Val Gly Tyr Arg Gln Ser Leu
305                 310                 315                 320

agc ctg atc gag cgc ggg aac ccc tca cgc agc ctg gag cag gtg tgt    1008
Ser Leu Ile Glu Arg Gly Asn Pro Ser Arg Ser Leu Glu Gln Val Cys
                325                 330                 335

cgc tgg gca cac tcc cag cag cgc cag gac ccc agc cac gct gag cac    1056
Arg Trp Ala His Ser Gln Gln Arg Gln Asp Pro Ser His Ala Glu His
            340                 345                 350

cat gac cac gtt gtg ttc ctc acc cgg cag gac ttt ggg ccc tca ggg    1104
His Asp His Val Val Phe Leu Thr Arg Gln Asp Phe Gly Pro Ser Gly
            355                 360                 365

tat gca ccc gtc act ggc atg tgt cac ccc ctg agg agc tgt gcc ctc    1152
Tyr Ala Pro Val Thr Gly Met Cys His Pro Leu Arg Ser Cys Ala Leu
    370                 375                 380

aac cat gag gat ggc ttc tcc tca gcc ttc gtg ata gct cat gag acc    1200
Asn His Glu Asp Gly Phe Ser Ser Ala Phe Val Ile Ala His Glu Thr
385                 390                 395                 400

ggc cac gtg ctc ggc atg gag cat gac ggt cag ggg aat ggc tgt gca    1248
Gly His Val Leu Gly Met Glu His Asp Gly Gln Gly Asn Gly Cys Ala
            405                 410                 415

gat gag acc agc ctg ggc agc gtc atg gcg ccc ctg gtg cag gct gcc    1296
Asp Glu Thr Ser Leu Gly Ser Val Met Ala Pro Leu Val Gln Ala Ala
            420                 425                 430

ttc cac cgc ttc cat tgg tcc cgc tgc agc aag ctg gag ctc agc cgc    1344
Phe His Arg Phe His Trp Ser Arg Cys Ser Lys Leu Glu Leu Ser Arg
            435                 440                 445

tac ctc ccc tcc tac gac tgc ctc ctc gat gac ccc ttt gat cct gcc    1392
Tyr Leu Pro Ser Tyr Asp Cys Leu Leu Asp Asp Pro Phe Asp Pro Ala
    450                 455                 460

tgg ccc cag ccc cca gag ctg cct ggg atc aac tac tca atg gat gag    1440
Trp Pro Gln Pro Pro Glu Leu Pro Gly Ile Asn Tyr Ser Met Asp Glu
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38

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cag tgc cgc ttt gac ttt ggc agt ggc tac cag acc tgc ttg gca ttc    1488
Gln Cys Arg Phe Asp Phe Gly Ser Gly Tyr Gln Thr Cys Leu Ala Phe
                485                    490                    495

agg acc ttt gag ccc tgc aag cag ctg tgg tgc agc cat cct gac aac    1536
Arg Thr Phe Glu Pro Cys Lys Gln Leu Trp Cys Ser His Pro Asp Asn
                500                    505                    510

cmg tay ttc tgc aag acc aag aag ggg ccc ccg ctg gat ggg act gag    1584
Xaa Tyr Phe Cys Lys Thr Lys Lys Gly Pro Pro Leu Asp Gly Thr Glu
                515                    520                    525

tgt gca ccc ggc aag tgg tgc ttc aaa ggt cac tgc atc tgg aag tcg    1632
Cys Ala Pro Gly Lys Trp Cys Phe Lys Gly His Cys Ile Trp Lys Ser
    530                    535                    540

ccg gag cag aca tat ggc cag gat gga ggc tgg agc tcc tgg acc aag    1680
Pro Glu Gln Thr Tyr Gly Gln Asp Gly Gly Trp Ser Ser Trp Thr Lys
545                    550                    555                    560

ttt ggg tca tgt tcg cgg tca tgt ggg ggc ggg gtg cga tcc cgc agc    1728
Phe Gly Ser Cys Ser Arg Ser Cys Gly Gly Gly Val Arg Ser Arg Ser
                565                    570                    575

cgg agc tgc aac aac ccc tcc cca gcc tat gga ggc cgc cyg tgc tta    1776
Arg Ser Cys Asn Asn Pro Ser Pro Ala Tyr Gly Gly Arg Xaa Cys Leu
                580                    585                    590

ggg ccc atg ttc gag tac cag gtc tgc aac agc gag gag tgc cct ggg    1824
Gly Pro Met Phe Glu Tyr Gln Val Cys Asn Ser Glu Glu Cys Pro Gly
                595                    600                    605

acc tac gag gac ttc cgg gcc cag cag tgt gcc aag cgc aac tcs tac    1872
Thr Tyr Glu Asp Phe Arg Ala Gln Gln Cys Ala Lys Arg Asn Xaa Tyr
                610                    615                    620

tat gtg cac cag aat gcc aag cac ags tgg gtg ccc tac gag cct gac    1920
Tyr Val His Gln Asn Ala Lys His Xaa Trp Val Pro Tyr Glu Pro Asp
625                    630                    635                    640

gat gac gcc cag aag tgt gag ctg atc tgc cag tcg gcg gac acr ggg    1968
Asp Asp Ala Gln Lys Cys Glu Leu Ile Cys Gln Ser Ala Asp Xaa Gly
                645                    650                    655

gac gtg gtg ttc atg aac cag gtg gtt cac gat ggg aca cgc tgc agc    2016
Asp Val Val Phe Met Asn Gln Val Val His Asp Gly Thr Arg Cys Ser
                660                    665                    670

tac cgg gac cca tac agc gtc tgt gcg cgt ggc gag tgt gtg cct gtc    2064
Tyr Arg Asp Pro Tyr Ser Val Cys Ala Arg Gly Glu Cys Val Pro Val
                675                    680                    685

ggc tgt gac aag gag gtg ggg tcc atg aag gcg gat gac aag tgt gga    2112
Gly Cys Asp Lys Glu Val Gly Ser Met Lys Ala Asp Asp Lys Cys Gly
```

```
gtc tgc ggg ggt gac aac tcc cac tgc agg act gtg aag ggg acg ctg   2160
Val Cys Gly Gly Asp Asn Ser His Cys Arg Thr Val Lys Gly Thr Leu
705                     710                 715             720

ggc aag gcc tcc aag cag gca gga gct ctc aag ctg gtg cag atc cca   2208
Gly Lys Ala Ser Lys Gln Ala Gly Ala Leu Lys Leu Val Gln Ile Pro
                    725                 730                 735

gca ggt gcc agg cac atc cag att gag gca ctg gag aag tcc ccc cac   2256
Ala Gly Ala Arg His Ile Gln Ile Glu Ala Leu Glu Lys Ser Pro His
                740                 745                 750

cgs wyw gtg gtg aag aac cag gtc acc ggc agc ttc atc ctc aac ccc   2304
Xaa Xaa Val Val Lys Asn Gln Val Thr Gly Ser Phe Ile Leu Asn Pro
            755                 760                 765

aag ggc aag gaa gcc aca agc cgg acc ttc acc gcc atg ggc ctg gag   2352
Lys Gly Lys Glu Ala Thr Ser Arg Thr Phe Thr Ala Met Gly Leu Glu
        770                 775                 780

tgg gag gat gcg gtg gag gat gcc aag gaa agc ctc aag acc agc ggg   2400
Trp Glu Asp Ala Val Glu Asp Ala Lys Glu Ser Leu Lys Thr Ser Gly
785                 790                 795                 800

ccc ctg cct gaa gcc att gcc atc ctg gct ctc ccc cca act gag ggt   2448
Pro Leu Pro Glu Ala Ile Ala Ile Leu Ala Leu Pro Pro Thr Glu Gly
                805                 810                 815

ggc ccc cgc agc agc ctg gcc tac aag tac gtc atc cat gag gac ctg   2496
Gly Pro Arg Ser Ser Leu Ala Tyr Lys Tyr Val Ile His Glu Asp Leu
            820                 825                 830

ctg ccc ctt atc ggg agc aac aat gtg ctc ctg gag gag atg gac acc   2544
Leu Pro Leu Ile Gly Ser Asn Asn Val Leu Leu Glu Glu Met Asp Thr
            835                 840                 845

tat gag tgg gcg ctc aag agc tgg gcc ccc tgc agc aag gcc tgt gga   2592
Tyr Glu Trp Ala Leu Lys Ser Trp Ala Pro Cys Ser Lys Ala Cys Gly
        850                 855                 860

gga ggg atc cag ttc acc aaa tac ggc tgc cgg cgc aga cga gac cac   2640
Gly Gly Ile Gln Phe Thr Lys Tyr Gly Cys Arg Arg Arg Arg Asp His
865                 870                 875                 880

cac atg gtg cag cga cac ctg tgt gac cac aag aag agg ccc aag ccc   2688
His Met Val Gln Arg His Leu Cys Asp His Lys Lys Arg Pro Lys Pro
                885                 890                 895

atc cgc cgg cgc tgc aac cag cac ccg tgc tct cag cct gtg tgg gtg   2736
Ile Arg Arg Arg Cys Asn Gln His Pro Cys Ser Gln Pro Val Trp Val
                900                 905                 910

acg gag gag tgg ggt gcc tgc agc cgg agc tgt ggg aag ctg ggg gtg   2784
Thr Glu Glu Trp Gly Ala Cys Ser Arg Ser Cys Gly Lys Leu Gly Val
```

40

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cag aca cgg ggg ata cag tgc ctg ctg ccc ctc tcc aat gga acc cac     2832
Gln Thr Arg Gly Ile Gln Cys Leu Leu Pro Leu Ser Asn Gly Thr His
    930                     935                 940

aag gtc atg ccg gcc aaa gcc tgc gcc ggg gac cgg cct gag gcc cga     2880
Lys Val Met Pro Ala Lys Ala Cys Ala Gly Asp Arg Pro Glu Ala Arg
945                     950                 955                 960

cgg ccc tgt ctc cga gtg ccc tgc cca gcc cag tgg agg ctg gga gcc     2928
Arg Pro Cys Leu Arg Val Pro Cys Pro Ala Gln Trp Arg Leu Gly Ala
                    965                 970                 975

tgg tcc cag tgc tct gcc acc tgt gga gag ggc atc cag cag cgg cag     2976
Trp Ser Gln Cys Ser Ala Thr Cys Gly Glu Gly Ile Gln Gln Arg Gln
            980                 985                 990

gtg gtg tgc agg acc aac gcc aac agc ctc ggg cat tgc gag ggg gat     3024
Val Val Cys Arg Thr Asn Ala Asn Ser Leu Gly His Cys Glu Gly Asp
            995                 1000                1005

agg cca gac act gtc cag gtc tgc arc ctg ccc gcc tgt gga gga aat     3072
Arg Pro Asp Thr Val Gln Val Cys Xaa Leu Pro Ala Cys Gly Gly Asn
        1010                1015                1020

cac cag aac tcc acg gtg agg gcc gat gtc tgg gaa ctt ggg acg cca     3120
His Gln Asn Ser Thr Val Arg Ala Asp Val Trp Glu Leu Gly Thr Pro
1025                    1030                1035                1040

gag ggg cag tgg gtg cca caa tct gra ccc cta cat ccc att aac aag     3168
Glu Gly Gln Trp Val Pro Gln Ser Xaa Pro Leu His Pro Ile Asn Lys
                1045                1050                1055

ata tca tca acg gag ccc tgc acg gga gac agg tct gtc ttc tgc cag     3216
Ile Ser Ser Thr Glu Pro Cys Thr Gly Asp Arg Ser Val Phe Cys Gln
            1060                1065                1070

atg gaa gtg ctc gat cgc tac tgc tcc att ccc ggc tac cac cgg ctc     3264
Met Glu Val Leu Asp Arg Tyr Cys Ser Ile Pro Gly Tyr His Arg Leu
        1075                1080                1085

tgc tgt gtg tcc tgc atc aag aag gcc tcg ggc ccc aac cct ggc cca     3312
Cys Cys Val Ser Cys Ile Lys Lys Ala Ser Gly Pro Asn Pro Gly Pro
    1090                1095                1100

gac cct ggc cca acc tca ctg ccc ccc ttc tcc act cct gga agc ccc     3360
Asp Pro Gly Pro Thr Ser Leu Pro Pro Phe Ser Thr Pro Gly Ser Pro
1105                    1110                1115                1120

tta cca gga ccc cag gac cct gca gat gct gca gag cct cct gga aag     3408
Leu Pro Gly Pro Gln Asp Pro Ala Asp Ala Ala Glu Pro Pro Gly Lys
                1125                1130                1135

cca acg gga tca gag gac cat cag cat ggc cga gcc aca cag ctc cca     3456
Pro Thr Gly Ser Glu Asp His Gln His Gly Arg Ala Thr Gln Leu Pro
```

```
gga gct ctg gat aca agc tcc cca ggg acc cag cat ccc ttt gcc cct    3504
Gly Ala Leu Asp Thr Ser Ser Pro Gly Thr Gln His Pro Phe Ala Pro
        1155                1160                1165

gag aca cca atc cct gga gca tcc tgg agc atc tcc cct acc acc ccc    3552
Glu Thr Pro Ile Pro Gly Ala Ser Trp Ser Ile Ser Pro Thr Thr Pro
        1170                1175                1180

ggg ggg ctg cct tgg ggc tgg act cag aca cct acg cca gtc cct gac    3600
Gly Gly Leu Pro Trp Gly Trp Thr Gln Thr Pro Thr Pro Val Pro Asp
1185                1190                1195                1200

ctg ccc ggg cgg ccg ctc gag ccc tat agt gag tcg tat tag           3642
Leu Pro Gly Arg Pro Leu Glu Pro Tyr Ser Glu Ser Tyr  *
            1205                1210
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<210> 14
<211> 1213
<212> PRT
<213> homo sapiens

β1

<400> 14

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Met Ala Pro Leu Arg Ala Leu Leu Ser Tyr Leu Leu Pro Leu His Cys
1                   5                   10                  15
Ala Leu Cys Thr Ala Ala Gly Ser Arg Thr Pro Glu Leu His Leu Ser
            20              25                  30
Gly Lys Leu Ser Asp Tyr Gly Val Thr Val Pro Cys Ser Thr Asp Phe
        35              40                  45
Arg Gly Arg Phe Leu Ser His Val Val Ser Gly Pro Ala Ala Ala Ser
    50              55                  60
Ala Gly Ser Met Val Val Asp Thr Pro Pro Thr Leu Pro Arg His Ser
65                  70                  75                  80
Ser His Leu Arg Val Ala Arg Ser Pro Leu His Pro Gly Gly Thr Leu
            85                  90                  95
Trp Pro Gly Arg Val Gly Arg His Ser Leu Tyr Phe Asn Val Thr Val
        100                 105                 110
Phe Gly Lys Glu Leu His Leu Arg Leu Arg Pro Asn Arg Arg Leu Val
        115                 120                 125
Val Pro Gly Ser Ser Val Glu Trp Gln Glu Asp Phe Arg Glu Leu Phe
    130                 135                 140
Arg Gln Pro Leu Arg Gln Glu Cys Val Tyr Thr Gly Gly Val Thr Gly
145                 150                 155                 160
Met Pro Gly Ala Ala Val Ala Ile Ser Asn Cys Asp Gly Leu Ala Gly
                165                 170                 175
Leu Ile Arg Thr Asp Ser Thr Asp Phe Phe Ile Glu Pro Leu Glu Arg
            180                 185                 190
Gly Gln Gln Glu Lys Glu Ala Ser Gly Arg Thr His Val Val Tyr Arg
            195                 200                 205
Arg Glu Ala Val Gln Gln Glu Trp Ala Glu Pro Asp Gly Asp Leu His
    210                 215                 220
Asn Glu Ala Phe Gly Leu Gly Asp Leu Pro Asn Leu Leu Gly Leu Val
225                 230                 235                 240
```

Gly Asp Gln Leu Gly Asp Thr Glu Arg Lys Arg Arg His Ala Lys Pro
           245   250   255

Gly Ser Tyr Ser Ile Glu Val Leu Leu Val Val Asp Asp Ser Val Val
          260   265   270

Arg Phe His Gly Lys Glu His Val Gln Asn Tyr Val Leu Thr Leu Met
          275   280   285

Asn Ile Val Asp Glu Ile Tyr His Asp Glu Ser Leu Gly Val His Ile
     290   295   300

Asn Ile Ala Leu Val Arg Leu Ile Met Val Gly Tyr Arg Gln Ser Leu
305   310   315   320

Ser Leu Ile Glu Arg Gly Asn Pro Ser Arg Ser Leu Glu Gln Val Cys
          325   330   335

Arg Trp Ala His Ser Gln Gln Arg Gln Asp Pro Ser His Ala Glu His
          340   345   350

His Asp His Val Val Phe Leu Thr Arg Gln Asp Phe Gly Pro Ser Gly
          355   360   365

Tyr Ala Pro Val Thr Gly Met Cys His Pro Leu Arg Ser Cys Ala Leu
          370   375   380

Asn His Glu Asp Gly Phe Ser Ser Ala Phe Val Ile Ala His Glu Thr
385   390   395   400

Gly His Val Leu Gly Met Glu His Asp Gly Gln Gly Asn Gly Cys Ala
                405   410   415

Asp Glu Thr Ser Leu Gly Ser Val Met Ala Pro Leu Val Gln Ala Ala
                420   425   430

Phe His Arg Phe His Trp Ser Arg Cys Ser Lys Leu Glu Leu Ser Arg
          435   440   445

Tyr Leu Pro Ser Tyr Asp Cys Leu Leu Asp Asp Pro Phe Asp Pro Ala
          450   455   460

Trp Pro Gln Pro Pro Glu Leu Pro Gly Ile Asn Tyr Ser Met Asp Glu
465   470   475   480

Gln Cys Arg Phe Asp Phe Gly Ser Gly Tyr Gln Thr Cys Leu Ala Phe
                485   490   495

Arg Thr Phe Glu Pro Cys Lys Gln Leu Trp Cys Ser His Pro Asp Asn
              500   505   510

Pro Tyr Phe Cys Lys Thr Lys Lys Gly Pro Pro Leu Asp Gly Thr Glu
          515   520   525

Cys Ala Pro Gly Lys Trp Cys Phe Lys Gly His Cys Ile Trp Lys Ser
          530   535   540

Pro Glu Gln Thr Tyr Gly Gln Asp Gly Gly Trp Ser Ser Trp Thr Lys
545   550   555   560

Phe Gly Ser Cys Ser Arg Ser Cys Gly Gly Gly Val Arg Ser Arg Ser
              565   570   575

Arg Ser Cys Asn Asn Pro Ser Pro Ala Tyr Gly Gly Arg Pro Cys Leu
              580   585   590

Gly Pro Met Phe Glu Tyr Gln Val Cys Asn Ser Glu Glu Cys Pro Gly
          595   600   605

Thr Tyr Glu Asp Phe Arg Ala Gln Gln Cys Ala Lys Arg Asn Ser Tyr
          610   615   620

Tyr Val His Gln Asn Ala Lys His Ser Trp Val Pro Tyr Glu Pro Asp
625   630   635   640

Asp Asp Ala Gln Lys Cys Glu Leu Ile Cys Gln Ser Ala Asp Thr Gly
              645   650   655

Asp Val Val Phe Met Asn Gln Val Val His Asp Gly Thr Arg Cys Ser
              660   665   670

Tyr Arg Asp Pro Tyr Ser Val Cys Ala Arg Gly Glu Cys Val Pro Val
          675   680   685

β1

43

```
Gly Cys Asp Lys Glu Val Gly Ser Met Lys Ala Asp Asp Lys Cys Gly
    690               695               700
Val Cys Gly Gly Asp Asn Ser His Cys Arg Thr Val Lys Gly Thr Leu
705               710               715               720
Gly Lys Ala Ser Lys Gln Ala Gly Ala Leu Lys Leu Val Gln Ile Pro
              725               730               735
Ala Gly Ala Arg His Ile Gln Ile Glu Ala Leu Glu Lys Ser Pro His
              740               745               750
Arg Ser Val Val Lys Asn Gln Val Thr Gly Ser Phe Ile Leu Asn Pro
          755               760               765
Lys Gly Lys Glu Ala Thr Ser Arg Thr Phe Thr Ala Met Gly Leu Glu
    770               775               780
Trp Glu Asp Ala Val Glu Asp Ala Lys Glu Ser Leu Lys Thr Ser Gly
785               790               795               800
Pro Leu Pro Glu Ala Ile Ala Ile Leu Ala Leu Pro Pro Thr Glu Gly
              805               810               815
Gly Pro Arg Ser Ser Leu Ala Tyr Lys Tyr Val Ile His Glu Asp Leu
              820               825               830
Leu Pro Leu Ile Gly Ser Asn Asn Val Leu Leu Glu Glu Met Asp Thr
          835               840               845
Tyr Glu Trp Ala Leu Lys Ser Trp Ala Pro Cys Ser Lys Ala Cys Gly
    850               855               860
Gly Gly Ile Gln Phe Thr Lys Tyr Gly Cys Arg Arg Arg Arg Asp His
865               870               875               880
His Met Val Gln Arg His Leu Cys Asp His Lys Lys Arg Pro Lys Pro
              885               890               895
Ile Arg Arg Arg Cys Asn Gln His Pro Cys Ser Gln Pro Val Trp Val
          900               905               910
Thr Glu Glu Trp Gly Ala Cys Ser Arg Ser Cys Gly Lys Leu Gly Val
    915               920               925
Gln Thr Arg Gly Ile Gln Cys Leu Leu Pro Leu Ser Asn Gly Thr His
    930               935               940
Lys Val Met Pro Ala Lys Ala Cys Ala Gly Asp Arg Pro Glu Ala Arg
945               950               955               960
Arg Pro Cys Leu Arg Val Pro Cys Pro Ala Gln Trp Arg Leu Gly Ala
              965               970               975
Trp Ser Gln Cys Ser Ala Thr Cys Gly Glu Gly Ile Gln Gln Arg Gln
          980               985               990
Val Val Cys Arg Thr Asn Ala Asn Ser Leu Gly His Cys Glu Gly Asp
          995              1000              1005
Arg Pro Asp Thr Val Gln Val Cys Ser Leu Pro Ala Cys Gly Gly Asn
    1010              1015              1020
His Gln Asn Ser Thr Val Arg Ala Asp Val Trp Glu Leu Gly Thr Pro
1025              1030              1035              1040
Glu Gly Gln Trp Val Pro Gln Ser Gly Pro Leu His Pro Ile Asn Lys
              1045              1050              1055
Ile Ser Ser Thr Glu Pro Cys Thr Gly Asp Arg Ser Val Phe Cys Gln
          1060              1065              1070
Met Glu Val Leu Asp Arg Tyr Cys Ser Ile Pro Gly Tyr His Arg Leu
          1075              1080              1085
Cys Cys Val Ser Cys Ile Lys Lys Ala Ser Gly Pro Asn Pro Gly Pro
    1090              1095              1100
Asp Pro Gly Pro Thr Ser Leu Pro Pro Phe Ser Thr Pro Gly Ser Pro
1105              1110              1115              1120
Leu Pro Gly Pro Gln Asp Pro Ala Asp Ala Ala Glu Pro Pro Gly Lys
              1125              1130              1135
```

44

```
Pro Thr Gly Ser Glu Asp His Gln His Gly Arg Ala Thr Gln Leu Pro
          1140                1145                1150
Gly Ala Leu Asp Thr Ser Ser Pro Gly Thr Gln His Pro Phe Ala Pro
          1155                1160                1165
Glu Thr Pro Ile Pro Gly Ala Ser Trp Ser Ile Ser Pro Thr Thr Pro
          1170                1175                1180
Gly Gly Leu Pro Trp Gly Trp Thr Gln Thr Pro Thr Pro Val Pro Asp
     1185                1190                1195                1200
Leu Pro Gly Arg Pro Leu Glu Pro Tyr Ser Glu Ser Tyr
               1205                1210


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<212> DNA
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<220>
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<222> (1)...(3708)

<400> 15
atg gct cca ctc cgc gcg ctg ctg tcc tac ctg ctg cct ttg cac tgt    48
Met Ala Pro Leu Arg Ala Leu Leu Ser Tyr Leu Leu Pro Leu His Cys
1                5                  10                 15

gcg ctc tgc rcc gcc gcg ggc agc cgg acc cca gag ctg cac ctc tct    96
Ala Leu Cys Xaa Ala Ala Gly Ser Arg Thr Pro Glu Leu His Leu Ser
               20                  25                 30

gga aag ctc agt gac tat ggt gtg aca gtg ccc tgc agc aca gac ttt   144
Gly Lys Leu Ser Asp Tyr Gly Val Thr Val Pro Cys Ser Thr Asp Phe
          35                  40                 45

cgg gga cgc ttc ctc tcc cac gtg gtg tct ggc cca gca gca gcc tct   192
Arg Gly Arg Phe Leu Ser His Val Val Ser Gly Pro Ala Ala Ala Ser
     50                  55                 60

gca ggg agc atg gta gtg gac acg cca ccc aca cta cca cga cac tcc   240
Ala Gly Ser Met Val Val Asp Thr Pro Pro Thr Leu Pro Arg His Ser
65                  70                  75                 80

agt cac ctc cgg gtg gct cgc agc cct ctg cac cca gga ggg acc ctg   288
Ser His Leu Arg Val Ala Arg Ser Pro Leu His Pro Gly Gly Thr Leu
               85                  90                 95

tgg cct ggc agg gtg ggg cgc cac tcc ctc tac ttc aat gtc act gtt   336
Trp Pro Gly Arg Val Gly Arg His Ser Leu Tyr Phe Asn Val Thr Val
          100                 105                110

ttc ggg aag gaa ctg cac ttg cgc ctg cgg ccc aat cgg agg ttg gta   384
Phe Gly Lys Glu Leu His Leu Arg Leu Arg Pro Asn Arg Arg Leu Val
          115                 120                125

gtg cca gga tcc tca gtg gag tgg cag gag gat ttt cgg gag ctg ttc   432
Val Pro Gly Ser Ser Val Glu Trp Gln Glu Asp Phe Arg Glu Leu Phe
```

45

```
cgg cag ccc tta cgg cag gag tgt gtg tac act gga ggt gtc act gga   480
Arg Gln Pro Leu Arg Gln Glu Cys Val Tyr Thr Gly Gly Val Thr Gly
145                 150                 155                 160

atg cct ggg gca gct gtt gcc atc agc aac tgt gac gga ttg gcg ggc   528
Met Pro Gly Ala Ala Val Ala Ile Ser Asn Cys Asp Gly Leu Ala Gly
                    165                 170                 175

ctc atc cgc aca gac agc acc gac ttc ttc att gag cct ctg gag cgg   576
Leu Ile Arg Thr Asp Ser Thr Asp Phe Phe Ile Glu Pro Leu Glu Arg
                180                 185                 190

ggc cag cag gag aag gag gcc agc ggg agg aca cat gtg gtg tac cgc   624
Gly Gln Gln Glu Lys Glu Ala Ser Gly Arg Thr His Val Val Tyr Arg
                195                 200                 205

cgg gag gcc gtc cag cag gag tgg gca gaa cct gac ggg gac ctg cac   672
Arg Glu Ala Val Gln Gln Glu Trp Ala Glu Pro Asp Gly Asp Leu His
                210                 215                 220

aat gaa gcc ttt ggc ctg gga gac ctt ccc aac ctg ctg ggc ctg gtg   720
Asn Glu Ala Phe Gly Leu Gly Asp Leu Pro Asn Leu Leu Gly Leu Val
225                 230                 235                 240

ggg gac cag ctg ggc gac aca gag cgg aag cgg cgg cat gcc aag cca   768
Gly Asp Gln Leu Gly Asp Thr Glu Arg Lys Arg Arg His Ala Lys Pro
                    245                 250                 255

ggc agc tac agc atc gag gtg ctg ctg gtg gtg gac gac tcg gtg gtt   816
Gly Ser Tyr Ser Ile Glu Val Leu Leu Val Val Asp Asp Ser Val Val
                260                 265                 270

cgc ttc cat ggc aag gag cat gtg cag aac tat gtc ctc acc ctc atg   864
Arg Phe His Gly Lys Glu His Val Gln Asn Tyr Val Leu Thr Leu Met
                275                 280                 285

aat atc gta gat gag att tac cac gat gag tcc ctg ggg gtt cat ata   912
Asn Ile Val Asp Glu Ile Tyr His Asp Glu Ser Leu Gly Val His Ile
290                 295                 300

aat att gcc ctc gtc cgc ttg atc atg gtt ggc tac cga cag tcc ctg   960
Asn Ile Ala Leu Val Arg Leu Ile Met Val Gly Tyr Arg Gln Ser Leu
305                 310                 315                 320

agc ctg atc gag cgc ggg aac ccc tca cgc agc ctg gag cag gtg tgt   1008
Ser Leu Ile Glu Arg Gly Asn Pro Ser Arg Ser Leu Glu Gln Val Cys
                325                 330                 335

cgc tgg gca cac tcc cag cag cgc cag gac ccc agc cac gct gag cac   1056
Arg Trp Ala His Ser Gln Gln Arg Gln Asp Pro Ser His Ala Glu His
                340                 345                 350

cat gac cac gtt gtg ttc ctc acc cgg cag gac ttt ggg ccc tca ggg   1104
His Asp His Val Val Phe Leu Thr Arg Gln Asp Phe Gly Pro Ser Gly
```

46

```
tat gca ccc gtc act ggc atg tgt cac ccc ctg agg agc tgt gcc ctc   1152
Tyr Ala Pro Val Thr Gly Met Cys His Pro Leu Arg Ser Cys Ala Leu
    370                375                380

aac cat gag gat ggc ttc tcc tca gcc ttc gtg ata gct cat gag acc   1200
Asn His Glu Asp Gly Phe Ser Ser Ala Phe Val Ile Ala His Glu Thr
385                390                395                400

ggc cac gtg ctc ggc atg gag cat gac ggt cag ggg aat ggc tgt gca   1248
Gly His Val Leu Gly Met Glu His Asp Gly Gln Gly Asn Gly Cys Ala
                405                410                415

gat gag acc agc ctg ggc agc gtc atg gcg ccc ctg gtg cag gct gcc   1296
Asp Glu Thr Ser Leu Gly Ser Val Met Ala Pro Leu Val Gln Ala Ala
            420                425                430

ttc cac cgc ttc cat tgg tcc cgc tgc agc aag ctg gag ctc agc cgc   1344
Phe His Arg Phe His Trp Ser Arg Cys Ser Lys Leu Glu Leu Ser Arg
            435                440                445
```

β1

```
tac ctc ccc tcc tac gac tgc ctc ctc gat gac ccc ttt gat cct gcc   1392
Tyr Leu Pro Ser Tyr Asp Cys Leu Leu Asp Asp Pro Phe Asp Pro Ala
    450                455                460

tgg ccc cag ccc cca gag ctg cct ggg atc aac tac tca atg gat gag   1440
Trp Pro Gln Pro Pro Glu Leu Pro Gly Ile Asn Tyr Ser Met Asp Glu
465                470                475                480

cag tgc cgc ttt gac ttt ggc agt ggc tac cag acc tgc ttg gca ttc   1488
Gln Cys Arg Phe Asp Phe Gly Ser Gly Tyr Gln Thr Cys Leu Ala Phe
                485                490                495

agg acc ttt gag ccc tgc aag cag ctg tgg tgc agc cat cct gac aac   1536
Arg Thr Phe Glu Pro Cys Lys Gln Leu Trp Cys Ser His Pro Asp Asn
                500                505                510

cmg tay ttc tgc aag acc aag aag ggg ccc ccg ctg gat ggg act gag   1584
Xaa Tyr Phe Cys Lys Thr Lys Lys Gly Pro Pro Leu Asp Gly Thr Glu
            515                520                525

tgt gca ccc ggc aag tgg tgc ttc aaa ggt cac tgc atc tgg aag tcg   1632
Cys Ala Pro Gly Lys Trp Cys Phe Lys Gly His Cys Ile Trp Lys Ser
    530                535                540

ccg gag cag aca tat ggc cag gat gga ggc tgg agc tcc tgg acc aag   1680
Pro Glu Gln Thr Tyr Gly Gln Asp Gly Gly Trp Ser Ser Trp Thr Lys
545                550                555                560

ttt ggg tca tgt tcg cgg tca tgt ggg ggc ggg gtg cga tcc cgc agc   1728
Phe Gly Ser Cys Ser Arg Ser Cys Gly Gly Gly Val Arg Ser Arg Ser
                565                570                575

cgg agc tgc aac aac ccc tcc cca gcc tat gga ggc cgc cyg tgc tta   1776
Arg Ser Cys Asn Asn Pro Ser Pro Ala Tyr Gly Gly Arg Xaa Cys Leu
```

ggg ccc atg ttc gag tac cag gtc tgc aac agc gag gag tgc cct ggg   1824
Gly Pro Met Phe Glu Tyr Gln Val Cys Asn Ser Glu Glu Cys Pro Gly
       595   600   605

acc tac gag gac ttc cgg gcc cag cag tgt gcc aag cgc aac tcs tac   1872
Thr Tyr Glu Asp Phe Arg Ala Gln Gln Cys Ala Lys Arg Asn Xaa Tyr
       610   615   620

tat gtg cac cag aat gcc aag cac ags tgg gtg ccc tac gag cct gac   1920
Tyr Val His Gln Asn Ala Lys His Xaa Trp Val Pro Tyr Glu Pro Asp
625   630   635   640

gat gac gcc cag aag tgt gag ctg atc tgc cag tcg gcg gac acr ggg   1968
Asp Asp Ala Gln Lys Cys Glu Leu Ile Cys Gln Ser Ala Asp Xaa Gly
           645   650   655

gac gtg gtg ttc atg aac cag gtg gtt cac gat ggg aca cgc tgc agc   2016
Asp Val Val Phe Met Asn Gln Val Val His Asp Gly Thr Arg Cys Ser
           660   665   670

β1

tac cgg gac cca tac agc gtc tgt gcg cgt ggc gag tgt gtg cct gtc   2064
Tyr Arg Asp Pro Tyr Ser Val Cys Ala Arg Gly Glu Cys Val Pro Val
           675   680   685

ggc tgt gac aag gag gtg ggg tcc atg aag gcg gat gac aag tgt gga   2112
Gly Cys Asp Lys Glu Val Gly Ser Met Lys Ala Asp Asp Lys Cys Gly
           690   695   700

gtc tgc ggg ggt gac aac tcc cac tgc agg act gtg aag ggg acg ctg   2160
Val Cys Gly Gly Asp Asn Ser His Cys Arg Thr Val Lys Gly Thr Leu
705   710   715   720

ggc aag gcc tcc aag cag gca gga gct ctc aag ctg gtg cag atc cca   2208
Gly Lys Ala Ser Lys Gln Ala Gly Ala Leu Lys Leu Val Gln Ile Pro
           725   730   735

gca ggt gcc agg cac atc cag att gag gca ctg gag aag tcc ccc cac   2256
Ala Gly Ala Arg His Ile Gln Ile Glu Ala Leu Glu Lys Ser Pro His
           740   745   750

cgs wyw gtg gtg aag aac cag gtc acc ggc agc ttc atc ctc aac ccc   2304
Xaa Xaa Val Val Lys Asn Gln Val Thr Gly Ser Phe Ile Leu Asn Pro
           755   760   765

aag ggc aag gaa gcc aca agc cgg acc ttc acc gcc atg ggc ctg gag   2352
Lys Gly Lys Glu Ala Thr Ser Arg Thr Phe Thr Ala Met Gly Leu Glu
           770   775   780

tgg gag gat gcg gtg gag gat gcc aag gaa agc ctc aag acc agc ggg   2400
Trp Glu Asp Ala Val Glu Asp Ala Lys Glu Ser Leu Lys Thr Ser Gly
785   790   795   800

ccc ctg cct gaa gcc att gcc atc ctg gct ctc ccc cca act gag ggt   2448
Pro Leu Pro Glu Ala Ile Ala Ile Leu Ala Leu Pro Pro Thr Glu Gly

48

```
ggc ccc cgc agc agc ctg gcc tac aag tac gtc atc cat gag gac ctg    2496
Gly Pro Arg Ser Ser Leu Ala Tyr Lys Tyr Val Ile His Glu Asp Leu
        820                 825                 830

ctg ccc ctt atc ggg agc aac aat gtg ctc ctg gag gag atg gac acc    2544
Leu Pro Leu Ile Gly Ser Asn Asn Val Leu Leu Glu Glu Met Asp Thr
        835                 840                 845

tat gag tgg gcg ctc aag agc tgg gcc ccc tgc agc aag gcc tgt gga    2592
Tyr Glu Trp Ala Leu Lys Ser Trp Ala Pro Cys Ser Lys Ala Cys Gly
        850                 855                 860

gga ggg atc cag ttc acc aaa tac ggc tgc cgg cgc aga cga gac cac    2640
Gly Gly Ile Gln Phe Thr Lys Tyr Gly Cys Arg Arg Arg Arg Asp His
865                 870                 875                 880

cac atg gtg cag cga cac ctg tgt gac cac aag aag agg ccc aag ccc    2688
His Met Val Gln Arg His Leu Cys Asp His Lys Lys Arg Pro Lys Pro
                885                 890                 895

atc cgc cgg cgc tgc aac cag cac ccg tgc tct cag cct gtg tgg gtg    2736
Ile Arg Arg Arg Cys Asn Gln His Pro Cys Ser Gln Pro Val Trp Val
        900                 905                 910

acg gag gag tgg ggt gcc tgc agc cgg agc tgt ggg aag ctg ggg gtg    2784
Thr Glu Glu Trp Gly Ala Cys Ser Arg Ser Cys Gly Lys Leu Gly Val
        915                 920                 925

cag aca cgg ggg ata cag tgc ctg ctg ccc ctc tcc aat gga acc cac    2832
Gln Thr Arg Gly Ile Gln Cys Leu Leu Pro Leu Ser Asn Gly Thr His
        930                 935                 940

aag gtc atg ccg gcc aaa gcc tgc gcc ggg gac cgg cct gag gcc cga    2880
Lys Val Met Pro Ala Lys Ala Cys Ala Gly Asp Arg Pro Glu Ala Arg
945                 950                 955                 960

cgg ccc tgt ctc cga gtg ccc tgc cca gcc cag tgg agg ctg gga gcc    2928
Arg Pro Cys Leu Arg Val Pro Cys Pro Ala Gln Trp Arg Leu Gly Ala
                965                 970                 975

tgg tcc cag tgc tct gcc acc tgt gga gag ggc atc cag cag cgg cag    2976
Trp Ser Gln Cys Ser Ala Thr Cys Gly Glu Gly Ile Gln Gln Arg Gln
            980                 985                 990

gtg gtg tgc agg acc aac gcc aac agc ctc ggg cat tgc gag ggg gat    3024
Val Val Cys Arg Thr Asn Ala Asn Ser Leu Gly His Cys Glu Gly Asp
        995                 1000                1005

agg cca gac act gtc cag gtc tgc arc ctg ccc gcc tgt gga gga aat    3072
Arg Pro Asp Thr Val Gln Val Cys Xaa Leu Pro Ala Cys Gly Gly Asn
    1010                1015                1020

cac cag aac tcc acg gtg agg gcc gat gtc tgg gaa ctt ggg acg cca    3120
His Gln Asn Ser Thr Val Arg Ala Asp Val Trp Glu Leu Gly Thr Pro
```

49

```
gag ggg cag tgg gtg cca caa tct gra ccc cta cat ccc att aac aag    3168
Glu Gly Gln Trp Val Pro Gln Ser Xaa Pro Leu His Pro Ile Asn Lys
            1045                    1050                    1055

ata tca tca atg tgt gca gcg gag ccc tgc acg gga gac agg tct gtc    3216
Ile Ser Ser Met Cys Ala Ala Glu Pro Cys Thr Gly Asp Arg Ser Val
            1060                    1065                    1070

ttc tgc cag atg gaa gtg ctc gat cgc tac tgc tcc att ccc ggc tac    3264
Phe Cys Gln Met Glu Val Leu Asp Arg Tyr Cys Ser Ile Pro Gly Tyr
            1075                    1080                    1085

cac cgg ctc tgc tgt gtg tcc tgc atc aag aag gcc tcg ggc ccc aac    3312
His Arg Leu Cys Cys Val Ser Cys Ile Lys Lys Ala Ser Gly Pro Asn
            1090                    1095                    1100

cct ggc cca gac cct ggc cca acc tca ctg ccc ccc ttc tcc act cct    3360
Pro Gly Pro Asp Pro Gly Pro Thr Ser Leu Pro Pro Phe Ser Thr Pro
1105                    1110                    1115                    1120

gga agc ccc tta cca gga ccc cag gac cct gca gat gct gca gag cct    3408
Gly Ser Pro Leu Pro Gly Pro Gln Asp Pro Ala Asp Ala Ala Glu Pro
            1125                    1130                    1135

cct gga aag cca acg gga tca gag gac cat cag cat ggc cga gcc aca    3456
Pro Gly Lys Pro Thr Gly Ser Glu Asp His Gln His Gly Arg Ala Thr
            1140                    1145                    1150

cag ctc cca gga gct ctg gat aca agc tcc cca ggg acc cag cat ccc    3504
Gln Leu Pro Gly Ala Leu Asp Thr Ser Ser Pro Gly Thr Gln His Pro
            1155                    1160                    1165

ttt gcc cct gag aca cca atc cct gga gca tcc tgg agc atc tcc cct    3552
Phe Ala Pro Glu Thr Pro Ile Pro Gly Ala Ser Trp Ser Ile Ser Pro
            1170                    1175                    1180

acc acc ccc ggg ggg ctg cct tgg ggc tgg act cag aca cct acg cca    3600
Thr Thr Pro Gly Gly Leu Pro Trp Gly Trp Thr Gln Thr Pro Thr Pro
1185                    1190                    1195                    1200

gtc cct gag gac aaa ggg caa cct gga gaa gac ctg aga cat ccc ggc    3648
Val Pro Glu Asp Lys Gly Gln Pro Gly Glu Asp Leu Arg His Pro Gly
            1205                    1210                    1215

acc agc ctc cct gct gac ctg ccc ggg cgg ccg ccc gag ccc tat agt    3696
Thr Ser Leu Pro Ala Asp Leu Pro Gly Arg Pro Pro Glu Pro Tyr Ser
            1220                    1225                    1230

gag tct gat tag                                                    3708
Glu Ser Asp *
            1235
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<210> 16

<211> 1235
<212> PRT
<213> homo sapiens

<400> 16
Met Ala Pro Leu Arg Ala Leu Leu Ser Tyr Leu Leu Pro Leu His Cys
1   5   10   15
Ala Leu Cys Thr Ala Ala Gly Ser Arg Thr Pro Glu Leu His Leu Ser
            20   25   30
Gly Lys Leu Ser Asp Tyr Gly Val Thr Val Pro Cys Ser Thr Asp Phe
            35   40   45
Arg Gly Arg Phe Leu Ser His Val Val Ser Gly Pro Ala Ala Ala Ser
    50   55   60
Ala Gly Ser Met Val Val Asp Thr Pro Pro Thr Leu Pro Arg His Ser
65   70   75   80
Ser His Leu Arg Val Ala Arg Ser Pro Leu His Pro Gly Gly Thr Leu
            85   90   95
Trp Pro Gly Arg Val Gly Arg His Ser Leu Tyr Phe Asn Val Thr Val
            100   105   110
Phe Gly Lys Glu Leu His Leu Arg Leu Arg Pro Asn Arg Arg Leu Val
            115   120   125
Val Pro Gly Ser Ser Val Glu Trp Gln Glu Asp Phe Arg Glu Leu Phe
    130   135   140
Arg Gln Pro Leu Arg Gln Glu Cys Val Tyr Thr Gly Gly Val Thr Gly
145   150   155   160
Met Pro Gly Ala Ala Val Ala Ile Ser Asn Cys Asp Gly Leu Ala Gly
            165   170   175
Leu Ile Arg Thr Asp Ser Thr Asp Phe Phe Ile Glu Pro Leu Glu Arg
            180   185   190
Gly Gln Gln Glu Lys Glu Ala Ser Gly Arg Thr His Val Val Tyr Arg
            195   200   205
Arg Glu Ala Val Gln Gln Glu Trp Ala Glu Pro Asp Gly Asp Leu His
    210   215   220
Asn Glu Ala Phe Gly Leu Gly Asp Leu Pro Asn Leu Leu Gly Leu Val
225   230   235   240
Gly Asp Gln Leu Gly Asp Thr Glu Arg Lys Arg Arg His Ala Lys Pro
            245   250   255
Gly Ser Tyr Ser Ile Glu Val Leu Leu Val Val Asp Asp Ser Val Val
            260   265   270
Arg Phe His Gly Lys Glu His Val Gln Asn Tyr Val Leu Thr Leu Met
    275   280   285
Asn Ile Val Asp Glu Ile Tyr His Asp Glu Ser Leu Gly Val His Ile
    290   295   300
Asn Ile Ala Leu Val Arg Leu Ile Met Val Gly Tyr Arg Gln Ser Leu
305   310   315   320
Ser Leu Ile Glu Arg Gly Asn Pro Ser Arg Ser Leu Glu Gln Val Cys
                325   330   335
Arg Trp Ala His Ser Gln Gln Arg Gln Asp Pro Ser His Ala Glu His
            340   345   350
His Asp His Val Val Phe Leu Thr Arg Gln Asp Phe Gly Pro Ser Gly
            355   360   365
Tyr Ala Pro Val Thr Gly Met Cys His Pro Leu Arg Ser Cys Ala Leu
    370   375   380
Asn His Glu Asp Gly Phe Ser Ser Ala Phe Val Ile Ala His Glu Thr
385   390   395   400
Gly His Val Leu Gly Met Glu His Asp Gly Gln Gly Asn Gly Cys Ala

51

Asp Glu Thr Ser Leu Gly Ser Val Met Ala Pro Leu Val Gln Ala Ala
　　　　　　　420　　　　　　　　425　　　　　　　　430
Phe His Arg Phe His Trp Ser Arg Cys Ser Lys Leu Glu Leu Ser Arg
　　　　435　　　　　　　　440　　　　　　　　445
Tyr Leu Pro Ser Tyr Asp Cys Leu Leu Asp Asp Pro Phe Asp Pro Ala
　　450　　　　　　　　455　　　　　　　　460
Trp Pro Gln Pro Pro Glu Leu Pro Gly Ile Asn Tyr Ser Met Asp Glu
465　　　　　　　　470　　　　　　　　475　　　　　　　　480
Gln Cys Arg Phe Asp Phe Gly Ser Gly Tyr Gln Thr Cys Leu Ala Phe
　　　　　　　485　　　　　　　　490　　　　　　　　495
Arg Thr Phe Glu Pro Cys Lys Gln Leu Trp Cys Ser His Pro Asp Asn
　　　　　　500　　　　　　　　505　　　　　　　　510
Pro Tyr Phe Cys Lys Thr Lys Lys Gly Pro Pro Leu Asp Gly Thr Glu
　　　　515　　　　　　　　520　　　　　　　　525
Cys Ala Pro Gly Lys Trp Cys Phe Lys Gly His Cys Ile Trp Lys Ser
　　530　　　　　　　　535　　　　　　　　540
Pro Glu Gln Thr Tyr Gly Gln Asp Gly Gly Trp Ser Ser Trp Thr Lys
545　　　　　　　　550　　　　　　　　555　　　　　　　　560
Phe Gly Ser Cys Ser Arg Ser Cys Gly Gly Gly Val Arg Ser Arg Ser
　　　　　　　565　　　　　　　　570　　　　　　　　575
Arg Ser Cys Asn Asn Pro Ser Pro Ala Tyr Gly Gly Arg Pro Cys Leu
　　　　　　　580　　　　　　　　585　　　　　　　　590
Gly Pro Met Phe Glu Tyr Gln Val Cys Asn Ser Glu Glu Cys Pro Gly
　　　　595　　　　　　　　600　　　　　　　　605
Thr Tyr Glu Asp Phe Arg Ala Gln Gln Cys Ala Lys Arg Asn Ser Tyr
　　610　　　　　　　　615　　　　　　　　620
Tyr Val His Gln Asn Ala Lys His Ser Trp Val Pro Tyr Glu Pro Asp
625　　　　　　　　630　　　　　　　　635　　　　　　　　640
Asp Asp Ala Gln Lys Cys Glu Leu Ile Cys Gln Ser Ala Asp Thr Gly
　　　　　　　645　　　　　　　　650　　　　　　　　655
Asp Val Val Phe Met Asn Gln Val Val His Asp Gly Thr Arg Cys Ser
　　　　　　　660　　　　　　　　665　　　　　　　　670
Tyr Arg Asp Pro Tyr Ser Val Cys Ala Arg Gly Glu Cys Val Pro Val
　　　　675　　　　　　　　680　　　　　　　　685
Gly Cys Asp Lys Glu Val Gly Ser Met Lys Ala Asp Asp Lys Cys Gly
　　690　　　　　　　　695　　　　　　　　700
Val Cys Gly Gly Asp Asn Ser His Cys Arg Thr Val Lys Gly Thr Leu
705　　　　　　　　710　　　　　　　　715　　　　　　　　720
Gly Lys Ala Ser Lys Gln Ala Gly Ala Leu Lys Leu Val Gln Ile Pro
　　　　　　　725　　　　　　　　730　　　　　　　　735
Ala Gly Ala Arg His Ile Gln Ile Glu Ala Leu Glu Lys Ser Pro His
　　　　　　740　　　　　　　　745　　　　　　　　750
Arg Ser Val Val Lys Asn Gln Val Thr Gly Ser Phe Ile Leu Asn Pro
　　　　755　　　　　　　　760　　　　　　　　765
Lys Gly Lys Glu Ala Thr Ser Arg Thr Phe Thr Ala Met Gly Leu Glu
　　770　　　　　　　　775　　　　　　　　780
Trp Glu Asp Ala Val Glu Asp Ala Lys Glu Ser Leu Lys Thr Ser Gly
785　　　　　　　　790　　　　　　　　795　　　　　　　　800
Pro Leu Pro Glu Ala Ile Ala Ile Leu Ala Leu Pro Pro Thr Glu Gly
　　　　　　　805　　　　　　　　810　　　　　　　　815
Gly Pro Arg Ser Ser Leu Ala Tyr Lys Tyr Val Ile His Glu Asp Leu
　　　　　　820　　　　　　　　825　　　　　　　　830
Leu Pro Leu Ile Gly Ser Asn Asn Val Leu Leu Glu Glu Met Asp Thr
　　　　835　　　　　　　　840　　　　　　　　845
Tyr Glu Trp Ala Leu Lys Ser Trp Ala Pro Cys Ser Lys Ala Cys Gly

52

```
          850                    855                    860
Gly Gly Ile Gln Phe Thr Lys Tyr Gly Cys Arg Arg Arg Asp His
865                    870                    875                    880
His Met Val Gln Arg His Leu Cys Asp His Lys Lys Arg Pro Lys Pro
                    885                    890                    895
Ile Arg Arg Arg Cys Asn Gln His Pro Cys Ser Gln Pro Val Trp Val
                    900                    905                    910
Thr Glu Glu Trp Gly Ala Cys Ser Arg Ser Cys Gly Lys Leu Gly Val
                    915                    920                    925
Gln Thr Arg Gly Ile Gln Cys Leu Leu Pro Leu Ser Asn Gly Thr His
                    930                    935                    940
Lys Val Met Pro Ala Lys Ala Cys Ala Gly Asp Arg Pro Glu Ala Arg
945                    950                    955                    960
Arg Pro Cys Leu Arg Val Pro Cys Pro Ala Gln Trp Arg Leu Gly Ala
                    965                    970                    975
Trp Ser Gln Cys Ser Ala Thr Cys Gly Glu Gly Ile Gln Gln Arg Gln
                    980                    985                    990
Val Val Cys Arg Thr Asn Ala Asn Ser Leu Gly His Cys Glu Gly Asp
                    995                    1000                   1005
Arg Pro Asp Thr Val Gln Val Cys Ser Leu Pro Ala Cys Gly Gly Asn
                    1010                   1015                   1020
His Gln Asn Ser Thr Val Arg Ala Asp Val Trp Glu Leu Gly Thr Pro
1025                   1030                   1035                   1040
Glu Gly Gln Trp Val Pro Gln Ser Gly Pro Leu His Pro Ile Asn Lys
                    1045                   1050                   1055
Ile Ser Ser Met Cys Ala Ala Glu Pro Cys Thr Gly Asp Arg Ser Val
                    1060                   1065                   1070
Phe Cys Gln Met Glu Val Leu Asp Arg Tyr Cys Ser Ile Pro Gly Tyr
                    1075                   1080                   1085
His Arg Leu Cys Cys Val Ser Cys Ile Lys Lys Ala Ser Gly Pro Asn
                    1090                   1095                   1100
Pro Gly Pro Asp Pro Gly Pro Thr Ser Leu Pro Pro Phe Ser Thr Pro
1105                   1110                   1115                   1120
Gly Ser Pro Leu Pro Gly Pro Gln Asp Pro Ala Asp Ala Ala Glu Pro
                    1125                   1130                   1135
Pro Gly Lys Pro Thr Gly Ser Glu Asp His Gln His Gly Arg Ala Thr
                    1140                   1145                   1150
Gln Leu Pro Gly Ala Leu Asp Thr Ser Ser Pro Gly Thr Gln His Pro
                    1155                   1160                   1165
Phe Ala Pro Glu Thr Pro Ile Pro Gly Ala Ser Trp Ser Ile Ser Pro
                    1170                   1175                   1180
Thr Thr Pro Gly Gly Leu Pro Trp Gly Trp Thr Gln Thr Pro Thr Pro
1185                   1190                   1195                   1200
Val Pro Glu Asp Lys Gly Gln Pro Gly Glu Asp Leu Arg His Pro Gly
                    1205                   1210                   1215
Thr Ser Leu Pro Ala Asp Leu Pro Gly Arg Pro Pro Glu Pro Tyr Ser
                    1220                   1225                   1230
Glu Ser Asp
          1235


<210> 17
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<212> DNA
<213> homo sapiens
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53

<220>
<221> CDS
<222> (1)...(3699)

<400> 17

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atg gct cca ctc cgc gcg ctg ctg tcc tac ctg ctg cct ttg cac tgt    48
Met Ala Pro Leu Arg Ala Leu Leu Ser Tyr Leu Leu Pro Leu His Cys
1               5                  10                  15

gcg ctc tgc rcc gcc gcg ggc agc cgg acc cca gag ctg cac ctc tct    96
Ala Leu Cys Xaa Ala Ala Gly Ser Arg Thr Pro Glu Leu His Leu Ser
                20                  25                  30

gga aag ctc agt gac tat ggt gtg aca gtg ccc tgc agc aca gac ttt   144
Gly Lys Leu Ser Asp Tyr Gly Val Thr Val Pro Cys Ser Thr Asp Phe
            35                  40                  45

cgg gga cgc ttc ctc tcc cac gtg gtg tct ggc cca gca gca gcc tct   192
Arg Gly Arg Phe Leu Ser His Val Val Ser Gly Pro Ala Ala Ala Ser
        50                  55                  60

gca ggg agc atg gta gtg gac acg cca ccc aca cta cca cga cac tcc   240
Ala Gly Ser Met Val Val Asp Thr Pro Pro Thr Leu Pro Arg His Ser
65                  70                  75                  80

agt cac ctc cgg gtg gct cgc agc cct ctg cac cca gga ggg acc ctg   288
Ser His Leu Arg Val Ala Arg Ser Pro Leu His Pro Gly Gly Thr Leu
                85                  90                  95

tgg cct ggc agg gtg ggg cgc cac tcc ctc tac ttc aat gtc act gtt   336
Trp Pro Gly Arg Val Gly Arg His Ser Leu Tyr Phe Asn Val Thr Val
            100                 105                 110

ttc ggg aag gaa ctg cac ttg cgc ctg cgg ccc aat cgg agg ttg gta   384
Phe Gly Lys Glu Leu His Leu Arg Leu Arg Pro Asn Arg Arg Leu Val
            115                 120                 125

gtg cca gga tcc tca gtg gag tgg cag gag gat ttt cgg gag ctg ttc   432
Val Pro Gly Ser Ser Val Glu Trp Gln Glu Asp Phe Arg Glu Leu Phe
        130                 135                 140

cgg cag ccc tta cgg cag gag tgt gtg tac act gga ggt gtc act gga   480
Arg Gln Pro Leu Arg Gln Glu Cys Val Tyr Thr Gly Gly Val Thr Gly
145                 150                 155                 160

atg cct ggg gca gct gtt gcc atc agc aac tgt gac gga ttg gcg ggc   528
Met Pro Gly Ala Ala Val Ala Ile Ser Asn Cys Asp Gly Leu Ala Gly
                165                 170                 175

ctc atc cgc aca gac agc acc gac ttc ttc att gag cct ctg gag cgg   576
Leu Ile Arg Thr Asp Ser Thr Asp Phe Phe Ile Glu Pro Leu Glu Arg
            180                 185                 190

ggc cag cag gag aag gag gcc agc ggg agg aca cat gtg gtg tac cgc   624
Gly Gln Gln Glu Lys Glu Ala Ser Gly Arg Thr His Val Val Tyr Arg
            195                 200                 205
```

54

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cgg gag gcc gtc cag cag gag tgg gca gaa cct gac ggg gac ctg cac        672
Arg Glu Ala Val Gln Gln Glu Trp Ala Glu Pro Asp Gly Asp Leu His
    210             215             220

aat gaa gcc ttt ggc ctg gga gac ctt ccc aac ctg ctg ggc ctg gtg        720
Asn Glu Ala Phe Gly Leu Gly Asp Leu Pro Asn Leu Leu Gly Leu Val
225             230             235             240

ggg gac cag ctg ggc gac aca gag cgg aag cgg cgg cat gcc aag cca        768
Gly Asp Gln Leu Gly Asp Thr Glu Arg Lys Arg Arg His Ala Lys Pro
            245             250             255

ggc agc tac agc atc gag gtg ctg ctg gtg gtg gac gac tcg gtg gtt        816
Gly Ser Tyr Ser Ile Glu Val Leu Leu Val Val Asp Asp Ser Val Val
            260             265             270

cgc ttc cat ggc aag gag cat gtg cag aac tat gtc ctc acc ctc atg        864
Arg Phe His Gly Lys Glu His Val Gln Asn Tyr Val Leu Thr Leu Met
        275             280             285

aat atc gta gat gag att tac cac gat gag tcc ctg ggg gtt cat ata        912
Asn Ile Val Asp Glu Ile Tyr His Asp Glu Ser Leu Gly Val His Ile
        290             295             300

aat att gcc ctc gtc cgc ttg atc atg gtt ggc tac cga cag tcc ctg        960
Asn Ile Ala Leu Val Arg Leu Ile Met Val Gly Tyr Arg Gln Ser Leu
305             310             315             320

agc ctg atc gag cgc ggg aac ccc tca cgc agc ctg gag cag gtg tgt       1008
Ser Leu Ile Glu Arg Gly Asn Pro Ser Arg Ser Leu Glu Gln Val Cys
            325             330             335

cgc tgg gca cac tcc cag cag cgc cag gac ccc agc cac gct gag cac       1056
Arg Trp Ala His Ser Gln Gln Arg Gln Asp Pro Ser His Ala Glu His
            340             345             350

cat gac cac gtt gtg ttc ctc acc cgg cag gac ttt ggg ccc tca ggg       1104
His Asp His Val Val Phe Leu Thr Arg Gln Asp Phe Gly Pro Ser Gly
        355             360             365

tat gca ccc gtc act ggc atg tgt cac ccc ctg agg agc tgt gcc ctc       1152
Tyr Ala Pro Val Thr Gly Met Cys His Pro Leu Arg Ser Cys Ala Leu
370             375             380

aac cat gag gat ggc ttc tcc tca gcc ttc gtg ata gct cat gag acc       1200
Asn His Glu Asp Gly Phe Ser Ser Ala Phe Val Ile Ala His Glu Thr
385             390             395             400

ggc cac gtg ctc ggc atg gag cat gac ggt cag ggg aat ggc tgt gca       1248
Gly His Val Leu Gly Met Glu His Asp Gly Gln Gly Asn Gly Cys Ala
            405             410             415

gat gag acc agc ctg ggc agc gtc atg gcg ccc ctg gtg cag gct gcc       1296
Asp Glu Thr Ser Leu Gly Ser Val Met Ala Pro Leu Val Gln Ala Ala
            420             425             430
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55

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ttc cac cgc ttc cat tgg tcc cgc tgc agc aag ctg gag ctc agc cgc    1344
Phe His Arg Phe His Trp Ser Arg Cys Ser Lys Leu Glu Leu Ser Arg
        435                 440                 445

tac ctc ccc tcc tac gac tgc ctc ctc gat gac ccc ttt gat cct gcc    1392
Tyr Leu Pro Ser Tyr Asp Cys Leu Leu Asp Asp Pro Phe Asp Pro Ala
        450                 455                 460

tgg ccc cag ccc cca gag ctg cct ggg atc aac tac tca atg gat gag    1440
Trp Pro Gln Pro Pro Glu Leu Pro Gly Ile Asn Tyr Ser Met Asp Glu
465                 470                 475                 480

cag tgc cgc ttt gac ttt ggc agt ggc tac cag acc tgc ttg gca ttc    1488
Gln Cys Arg Phe Asp Phe Gly Ser Gly Tyr Gln Thr Cys Leu Ala Phe
                485                 490                 495

agg acc ttt gag ccc tgc aag cag ctg tgg tgc agc cat cct gac aac    1536
Arg Thr Phe Glu Pro Cys Lys Gln Leu Trp Cys Ser His Pro Asp Asn
        500                 505                 510

cmg tay ttc tgc aag acc aag aag ggg ccc ccg ctg gat ggg act gag    1584
Xaa Tyr Phe Cys Lys Thr Lys Lys Gly Pro Pro Leu Asp Gly Thr Glu
        515                 520                 525

tgt gca ccc ggc aag tgg tgc ttc aaa ggt cac tgc atc tgg aag tcg    1632
Cys Ala Pro Gly Lys Trp Cys Phe Lys Gly His Cys Ile Trp Lys Ser
        530                 535                 540

ccg gag cag aca tat ggc cag gat gga ggc tgg agc tcc tgg acc aag    1680
Pro Glu Gln Thr Tyr Gly Gln Asp Gly Gly Trp Ser Ser Trp Thr Lys
545                 550                 555                 560

ttt ggg tca tgt tcg cgg tca tgt ggg ggc ggg gtg cga tcc cgc agc    1728
Phe Gly Ser Cys Ser Arg Ser Cys Gly Gly Gly Val Arg Ser Arg Ser
                565                 570                 575

cgg agc tgc aac aac ccc tcc cca gcc tat gga ggc cgc cyg tgc tta    1776
Arg Ser Cys Asn Asn Pro Ser Pro Ala Tyr Gly Gly Arg Xaa Cys Leu
            580                 585                 590

ggg ccc atg ttc gag tac cag gtc tgc aac agc gag gag tgc cct ggg    1824
Gly Pro Met Phe Glu Tyr Gln Val Cys Asn Ser Glu Glu Cys Pro Gly
            595                 600                 605

acc tac gag gac ttc cgg gcc cag cag tgt gcc aag cgc aac tcs tac    1872
Thr Tyr Glu Asp Phe Arg Ala Gln Gln Cys Ala Lys Arg Asn Xaa Tyr
        610                 615                 620

tat gtg cac cag aat gcc aag cac ags tgg gtg ccc tac gag cct gac    1920
Tyr Val His Gln Asn Ala Lys His Xaa Trp Val Pro Tyr Glu Pro Asp
625                 630                 635                 640

gat gac gcc cag aag tgt gag ctg atc tgc cag tcg gcg gac acr ggg    1968
Asp Asp Ala Gln Lys Cys Glu Leu Ile Cys Gln Ser Ala Asp Xaa Gly
                645                 650                 655
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56

```
gac gtg gtg ttc atg aac cag gtg gtt cac gat ggg aca cgc tgc agc    2016
Asp Val Val Phe Met Asn Gln Val Val His Asp Gly Thr Arg Cys Ser
        660             665             670

tac cgg gac cca tac agc gtc tgt gcg cgt ggc gag tgt gtg cct gtc    2064
Tyr Arg Asp Pro Tyr Ser Val Cys Ala Arg Gly Glu Cys Val Pro Val
        675             680             685

ggc tgt gac aag gag gtg ggg tcc atg aag gcg gat gac aag tgt gga    2112
Gly Cys Asp Lys Glu Val Gly Ser Met Lys Ala Asp Asp Lys Cys Gly
        690             695             700

gtc tgc ggg ggt gac aac tcc cac tgc agg act gtg aag ggg acg ctg    2160
Val Cys Gly Gly Asp Asn Ser His Cys Arg Thr Val Lys Gly Thr Leu
705             710             715             720

ggc aag gcc tcc aag cag gca gga gct ctc aag ctg gtg cag atc cca    2208
Gly Lys Ala Ser Lys Gln Ala Gly Ala Leu Lys Leu Val Gln Ile Pro
            725             730             735

gca ggt gcc agg cac atc cag att gag gca ctg gag aag tcc ccc cac    2256
Ala Gly Ala Arg His Ile Gln Ile Glu Ala Leu Glu Lys Ser Pro His
            740             745             750

cgs wyw gtg gtg aag aac cag gtc acc ggc agc ttc atc ctc aac ccc    2304
Xaa Xaa Val Val Lys Asn Gln Val Thr Gly Ser Phe Ile Leu Asn Pro
        755             760             765

aag ggc aag gaa gcc aca agc cgg acc ttc acc gcc atg ggc ctg gag    2352
Lys Gly Lys Glu Ala Thr Ser Arg Thr Phe Thr Ala Met Gly Leu Glu
        770             775             780

tgg gag gat gcg gtg gag gat gcc aag gaa agc ctc aag acc agc ggg    2400
Trp Glu Asp Ala Val Glu Asp Ala Lys Glu Ser Leu Lys Thr Ser Gly
785             790             795             800

ccc ctg cct gaa gcc att gcc atc ctg gct ctc ccc cca act gag ggt    2448
Pro Leu Pro Glu Ala Ile Ala Ile Leu Ala Leu Pro Pro Thr Glu Gly
            805             810             815

ggc ccc cgc agc agc ctg gcc tac aag tac gtc atc cat gag gac ctg    2496
Gly Pro Arg Ser Ser Leu Ala Tyr Lys Tyr Val Ile His Glu Asp Leu
            820             825             830

ctg ccc ctt atc ggg agc aac aat gtg ctc ctg gag gag atg gac acc    2544
Leu Pro Leu Ile Gly Ser Asn Asn Val Leu Leu Glu Glu Met Asp Thr
            835             840             845

tat gag tgg gcg ctc aag agc tgg gcc ccc tgc agc aag gcc tgt gga    2592
Tyr Glu Trp Ala Leu Lys Ser Trp Ala Pro Cys Ser Lys Ala Cys Gly
        850             855             860

gga ggg atc cag ttc acc aaa tac ggc tgc cgg cgc aga cga gac cac    2640
Gly Gly Ile Gln Phe Thr Lys Tyr Gly Cys Arg Arg Arg Arg Asp His
865             870             875             880
```

57

```
cac atg gtg cag cga cac ctg tgt gac cac aag aag agg ccc aag ccc    2688
His Met Val Gln Arg His Leu Cys Asp His Lys Lys Arg Pro Lys Pro
            885                 890                 895

atc cgc cgg cgc tgc aac cag cac ccg tgc tct cag cct gtg tgg gtg    2736
Ile Arg Arg Arg Cys Asn Gln His Pro Cys Ser Gln Pro Val Trp Val
            900                 905                 910

acg gag gag tgg ggt gcc tgc agc cgg agc tgt ggg aag ctg ggg gtg    2784
Thr Glu Glu Trp Gly Ala Cys Ser Arg Ser Cys Gly Lys Leu Gly Val
            915                 920                 925

cag aca cgg ggg ata cag tgc ctg ctg ccc ctc tcc aat gga acc cac    2832
Gln Thr Arg Gly Ile Gln Cys Leu Leu Pro Leu Ser Asn Gly Thr His
            930                 935                 940

aag gtc atg ccg gcc aaa gcc tgc gcc ggg gac cgg cct gag gcc cga    2880
Lys Val Met Pro Ala Lys Ala Cys Ala Gly Asp Arg Pro Glu Ala Arg
945                 950                 955                 960

cgg ccc tgt ctc cga gtg ccc tgc cca gcc cag tgg agg ctg gga gcc    2928
Arg Pro Cys Leu Arg Val Pro Cys Pro Ala Gln Trp Arg Leu Gly Ala
            965                 970                 975

tgg tcc cag tgc tct gcc acc tgt gga gag ggc atc cag cag cgg cag    2976
Trp Ser Gln Cys Ser Ala Thr Cys Gly Glu Gly Ile Gln Gln Arg Gln
            980                 985                 990

gtg gtg tgc agg acc aac gcc aac agc ctc ggg cat tgc gag ggg gat    3024
Val Val Cys Arg Thr Asn Ala Asn Ser Leu Gly His Cys Glu Gly Asp
            995                 1000                1005

agg cca gac act gtc cag gtc tgc arc ctg ccc gcc tgt gga gga aat    3072
Arg Pro Asp Thr Val Gln Val Cys Xaa Leu Pro Ala Cys Gly Gly Asn
            1010                1015                1020

cac cag aac tcc acg gtg agg gcc gat gtc tgg gaa ctt ggg acg cca    3120
His Gln Asn Ser Thr Val Arg Ala Asp Val Trp Glu Leu Gly Thr Pro
1025                1030                1035                1040

gag ggg cag tgg gtg cca caa tct gra ccc cta cat ccc att aac aag    3168
Glu Gly Gln Trp Val Pro Gln Ser Xaa Pro Leu His Pro Ile Asn Lys
            1045                1050                1055

ata tca tca acg gag ccc tgc acg gga gac agg tct gtc ttc tgc cag    3216
Ile Ser Ser Thr Glu Pro Cys Thr Gly Asp Arg Ser Val Phe Cys Gln
            1060                1065                1070

atg gaa gtg ctc gat cgc tac tgc tcc att ccc ggc tac cac cgg ctc    3264
Met Glu Val Leu Asp Arg Tyr Cys Ser Ile Pro Gly Tyr His Arg Leu
            1075                1080                1085

tgc tgt gtg tcc tgc atc aag aag gcc tcg ggc ccc aac cct ggc cca    3312
Cys Cys Val Ser Cys Ile Lys Lys Ala Ser Gly Pro Asn Pro Gly Pro
            1090                1095                1100
```

58

```
gac cct ggc cca acc tca ctg ccc ccc ttc tcc act cct gga agc ccc   3360
Asp Pro Gly Pro Thr Ser Leu Pro Pro Phe Ser Thr Pro Gly Ser Pro
1105                1110                1115                1120

tta cca gga ccc cag gac cct gca gat gct gca gag cct cct gga aag   3408
Leu Pro Gly Pro Gln Asp Pro Ala Asp Ala Ala Glu Pro Pro Gly Lys
                    1125                1130                1135

cca acg gga tca gag gac cat cag cat ggc cga gcc aca cag ctc cca   3456
Pro Thr Gly Ser Glu Asp His Gln His Gly Arg Ala Thr Gln Leu Pro
                1140                1145                1150

gga gct ctg gat aca agc tcc cca ggg acc cag cat ccc ttt gcc cct   3504
Gly Ala Leu Asp Thr Ser Ser Pro Gly Thr Gln His Pro Phe Ala Pro
                1155                1160                1165

gag aca cca atc cct gga gca tcc tgg agc atc tcc cct acc acc ccc   3552
Glu Thr Pro Ile Pro Gly Ala Ser Trp Ser Ile Ser Pro Thr Thr Pro
            1170                1175                1180

ggg ggg ctg cct tgg ggc tgg act cag aca cct acg cca gtc cct gag   3600
Gly Gly Leu Pro Trp Gly Trp Thr Gln Thr Pro Thr Pro Val Pro Glu
1185                1190                1195                1200

gac aaa ggg caa cct gga gaa gac ctg aga cat ccc ggc acc agc ctc   3648
Asp Lys Gly Gln Pro Gly Glu Asp Leu Arg His Pro Gly Thr Ser Leu
                1205                1210                1215

cct gct gac ctg ccc ggg cgg ccg ccc gag ccc tat agt gag tct gat   3696
Pro Ala Asp Leu Pro Gly Arg Pro Pro Glu Pro Tyr Ser Glu Ser Asp
                1220                1225                1230

tag                                                               3699
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<210> 18
<211> 1232
<212> PRT
<213> homo sapiens

<400> 18
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Met Ala Pro Leu Arg Ala Leu Leu Ser Tyr Leu Leu Pro Leu His Cys
1               5                   10                  15
Ala Leu Cys Thr Ala Ala Gly Ser Arg Thr Pro Glu Leu His Leu Ser
            20                  25                  30
Gly Lys Leu Ser Asp Tyr Gly Val Thr Val Pro Cys Ser Thr Asp Phe
        35                  40                  45
Arg Gly Arg Phe Leu Ser His Val Val Ser Gly Pro Ala Ala Ala Ser
    50                  55                  60
Ala Gly Ser Met Val Val Asp Thr Pro Pro Thr Leu Pro Arg His Ser
65                  70                  75                  80
Ser His Leu Arg Val Ala Arg Ser Pro Leu His Pro Gly Gly Thr Leu
                85                  90                  95
```

59

```
Trp Pro Gly Arg Val Gly Arg His Ser Leu Tyr Phe Asn Val Thr Val
            100                     105                 110
Phe Gly Lys Glu Leu His Leu Arg Leu Arg Pro Asn Arg Arg Leu Val
            115                     120                 125
Val Pro Gly Ser Ser Val Glu Trp Gln Glu Asp Phe Arg Glu Leu Phe
            130                     135                 140
Arg Gln Pro Leu Arg Gln Glu Cys Val Tyr Thr Gly Gly Val Thr Gly
145                     150                     155                 160
Met Pro Gly Ala Ala Val Ala Ile Ser Asn Cys Asp Gly Leu Ala Gly
                165                     170                 175
Leu Ile Arg Thr Asp Ser Thr Asp Phe Phe Ile Glu Pro Leu Glu Arg
                180                     185                 190
Gly Gln Gln Glu Lys Glu Ala Ser Gly Arg Thr His Val Val Tyr Arg
                195                     200                 205
Arg Glu Ala Val Gln Gln Glu Trp Ala Glu Pro Asp Gly Asp Leu His
            210                     215                 220
Asn Glu Ala Phe Gly Leu Gly Asp Leu Pro Asn Leu Leu Gly Leu Val
225                     230                     235                 240
Gly Asp Gln Leu Gly Asp Thr Glu Arg Lys Arg Arg His Ala Lys Pro
                245                     250                 255
Gly Ser Tyr Ser Ile Glu Val Leu Leu Val Val Asp Asp Ser Val Val
                260                     265                 270
Arg Phe His Gly Lys Glu His Val Gln Asn Tyr Val Leu Thr Leu Met
            275                     280                 285
Asn Ile Val Asp Glu Ile Tyr His Asp Glu Ser Leu Gly Val His Ile
            290                     295                 300
Asn Ile Ala Leu Val Arg Leu Ile Met Val Gly Tyr Arg Gln Ser Leu
305                     310                     315                 320
Ser Leu Ile Glu Arg Gly Asn Pro Ser Arg Ser Leu Glu Gln Val Cys
                325                     330                 335
Arg Trp Ala His Ser Gln Gln Arg Gln Asp Pro Ser His Ala Glu His
                340                     345                 350
His Asp His Val Val Phe Leu Thr Arg Gln Asp Phe Gly Pro Ser Gly
                355                     360                 365
Tyr Ala Pro Val Thr Gly Met Cys His Pro Leu Arg Ser Cys Ala Leu
            370                     375                 380
Asn His Glu Asp Gly Phe Ser Ser Ala Phe Val Ile Ala His Glu Thr
385                     390                     395                 400
Gly His Val Leu Gly Met Glu His Asp Gly Gln Gly Asn Gly Cys Ala
                405                     410                 415
Asp Glu Thr Ser Leu Gly Ser Val Met Ala Pro Leu Val Gln Ala Ala
                420                     425                 430
Phe His Arg Phe His Trp Ser Arg Cys Ser Lys Leu Glu Leu Ser Arg
            435                     440                 445
Tyr Leu Pro Ser Tyr Asp Cys Leu Leu Asp Asp Pro Phe Asp Pro Ala
    450                     455                 460
Trp Pro Gln Pro Pro Glu Leu Pro Gly Ile Asn Tyr Ser Met Asp Glu
465                     470                     475                 480
Gln Cys Arg Phe Asp Phe Gly Ser Gly Tyr Gln Thr Cys Leu Ala Phe
                485                     490                 495
Arg Thr Phe Glu Pro Cys Lys Gln Leu Trp Cys Ser His Pro Asp Asn
            500                     505                 510
Pro Tyr Phe Cys Lys Thr Lys Lys Gly Pro Pro Leu Asp Gly Thr Glu
            515                     520                 525
Cys Ala Pro Gly Lys Trp Cys Phe Lys Gly His Cys Ile Trp Lys Ser
    530                     535                 540
```

60

```
Pro Glu Gln Thr Tyr Gly Gln Asp Gly Gly Trp Ser Ser Trp Thr Lys
545                 550                 555                 560
Phe Gly Ser Cys Ser Arg Ser Cys Gly Gly Val Arg Ser Arg Ser
                565                 570                 575
Arg Ser Cys Asn Asn Pro Ser Pro Ala Tyr Gly Gly Arg Pro Cys Leu
            580                 585                 590
Gly Pro Met Phe Glu Tyr Gln Val Cys Asn Ser Glu Glu Cys Pro Gly
        595                 600                 605
Thr Tyr Glu Asp Phe Arg Ala Gln Gln Cys Ala Lys Arg Asn Ser Tyr
    610                 615                 620
Tyr Val His Gln Asn Ala Lys His Ser Trp Val Pro Tyr Glu Pro Asp
625                 630                 635                 640
Asp Asp Ala Gln Lys Cys Glu Leu Ile Cys Gln Ser Ala Asp Thr Gly
            645                 650                 655
Asp Val Val Phe Met Asn Gln Val Val His Asp Gly Thr Arg Cys Ser
            660                 665                 670
Tyr Arg Asp Pro Tyr Ser Val Cys Ala Arg Gly Glu Cys Val Pro Val
            675                 680                 685
Gly Cys Asp Lys Glu Val Gly Ser Met Lys Ala Asp Asp Lys Cys Gly
        690                 695                 700
Val Cys Gly Gly Asp Asn Ser His Cys Arg Thr Val Lys Gly Thr Leu
705                 710                 715                 720
Gly Lys Ala Ser Lys Gln Ala Gly Ala Leu Lys Leu Val Gln Ile Pro
                725                 730                 735
Ala Gly Ala Arg His Ile Gln Ile Glu Ala Leu Glu Lys Ser Pro His
            740                 745                 750
Arg Ser Val Val Lys Asn Gln Val Thr Gly Ser Phe Ile Leu Asn Pro
        755                 760                 765
Lys Gly Lys Glu Ala Thr Ser Arg Thr Phe Thr Ala Met Gly Leu Glu
    770                 775                 780
Trp Glu Asp Ala Val Glu Asp Ala Lys Glu Ser Leu Lys Thr Ser Gly
785                 790                 795                 800
Pro Leu Pro Glu Ala Ile Ala Ile Leu Ala Leu Pro Pro Thr Glu Gly
            805                 810                 815
Gly Pro Arg Ser Ser Leu Ala Tyr Lys Tyr Val Ile His Glu Asp Leu
            820                 825                 830
Leu Pro Leu Ile Gly Ser Asn Asn Val Leu Leu Glu Glu Met Asp Thr
        835                 840                 845
Tyr Glu Trp Ala Leu Lys Ser Trp Ala Pro Cys Ser Lys Ala Cys Gly
    850                 855                 860
Gly Gly Ile Gln Phe Thr Lys Tyr Gly Cys Arg Arg Arg Arg Asp His
865                 870                 875                 880
His Met Val Gln Arg His Leu Cys Asp His Lys Lys Arg Pro Lys Pro
            885                 890                 895
Ile Arg Arg Arg Cys Asn Gln His Pro Cys Ser Gln Pro Val Trp Val
            900                 905                 910
Thr Glu Glu Trp Gly Ala Cys Ser Arg Ser Cys Gly Lys Leu Gly Val
            915                 920                 925
Gln Thr Arg Gly Ile Gln Cys Leu Leu Pro Leu Ser Asn Gly Thr His
    930                 935                 940
Lys Val Met Pro Ala Lys Ala Cys Ala Gly Asp Arg Pro Glu Ala Arg
945                 950                 955                 960
Arg Pro Cys Leu Arg Val Pro Cys Pro Ala Gln Trp Arg Leu Gly Ala
            965                 970                 975
Trp Ser Gln Cys Ser Ala Thr Cys Gly Glu Gly Ile Gln Gln Arg Gln
            980                 985                 990
```

61

```
Val Val Cys Arg Thr Asn Ala Asn Ser Leu Gly His Cys Glu Gly Asp
        995                 1000                1005
Arg Pro Asp Thr Val Gln Val Cys Ser Leu Pro Ala Cys Gly Gly Asn
    1010                1015                1020
His Gln Asn Ser Thr Val Arg Ala Asp Val Trp Glu Leu Gly Thr Pro
1025                1030                1035                1040
Glu Gly Gln Trp Val Pro Gln Ser Gly Pro Leu His Pro Ile Asn Lys
                1045                1050                1055
Ile Ser Ser Thr Glu Pro Cys Thr Gly Asp Arg Ser Val Phe Cys Gln
                1060                1065                1070
Met Glu Val Leu Asp Arg Tyr Cys Ser Ile Pro Gly Tyr His Arg Leu
        1075                1080                1085
Cys Cys Val Ser Cys Ile Lys Lys Ala Ser Gly Pro Asn Pro Gly Pro
    1090                1095                1100
Asp Pro Gly Pro Thr Ser Leu Pro Pro Phe Ser Thr Pro Gly Ser Pro
1105                1110                1115                1120
Leu Pro Gly Pro Gln Asp Pro Ala Asp Ala Ala Glu Pro Pro Gly Lys
                1125                1130                1135
Pro Thr Gly Ser Glu Asp His Gln His Gly Arg Ala Thr Gln Leu Pro
                1140                1145                1150
Gly Ala Leu Asp Thr Ser Ser Pro Gly Thr Gln His Pro Phe Ala Pro
        1155                1160                1165
Glu Thr Pro Ile Pro Gly Ala Ser Trp Ser Ile Ser Pro Thr Thr Pro
    1170                1175                1180
Gly Gly Leu Pro Trp Gly Trp Thr Gln Thr Pro Thr Pro Val Pro Glu
1185                1190                1195                1200
Asp Lys Gly Gln Pro Gly Glu Asp Leu Arg His Pro Gly Thr Ser Leu
                1205                1210                1215
Pro Ala Asp Leu Pro Gly Arg Pro Pro Glu Pro Tyr Ser Glu Ser Asp
        1220                1225                1230


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<212> DNA
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<220>
<221> CDS
<222> (1)...(3759)

<400> 19
atg gct cca ctc cgc gcg ctg ctg tcc tac ctg ctg cct ttg cac tgt     48
Met Ala Pro Leu Arg Ala Leu Leu Ser Tyr Leu Leu Pro Leu His Cys
 1               5                  10                  15

gcg ctc tgc rcc gcc gcg ggc agc cgg acc cca gag ctg cac ctc tct     96
Ala Leu Cys Xaa Ala Ala Gly Ser Arg Thr Pro Glu Leu His Leu Ser
            20                  25                  30

gga aag ctc agt gac tat ggt gtg aca gtg ccc tgc agc aca gac ttt    144
Gly Lys Leu Ser Asp Tyr Gly Val Thr Val Pro Cys Ser Thr Asp Phe
        35                  40                  45

cgg gga cgc ttc ctc tcc cac gtg gtg tct ggc cca gca gca gcc tct    192
Arg Gly Arg Phe Leu Ser His Val Val Ser Gly Pro Ala Ala Ala Ser
```

β1

62

```
gca ggg agc atg gta gtg gac acg cca ccc aca cta cca cga cac tcc    240
Ala Gly Ser Met Val Val Asp Thr Pro Pro Thr Leu Pro Arg His Ser
 65              70              75              80

agt cac ctc cgg gtg gct cgc agc cct ctg cac cca gga ggg acc ctg    288
Ser His Leu Arg Val Ala Arg Ser Pro Leu His Pro Gly Gly Thr Leu
                85              90              95

tgg cct ggc agg gtg ggg cgc cac tcc ctc tac ttc aat gtc act gtt    336
Trp Pro Gly Arg Val Gly Arg His Ser Leu Tyr Phe Asn Val Thr Val
            100             105             110

ttc ggg aag gaa ctg cac ttg cgc ctg cgg ccc aat cgg agg ttg gta    384
Phe Gly Lys Glu Leu His Leu Arg Leu Arg Pro Asn Arg Arg Leu Val
            115             120             125

gtg cca gga tcc tca gtg gag tgg cag gag gat ttt cgg gag ctg ttc    432
Val Pro Gly Ser Ser Val Glu Trp Gln Glu Asp Phe Arg Glu Leu Phe
    130             135             140

cgg cag ccc tta cgg cag gag tgt gtg tac act gga ggt gtc act gga    480
Arg Gln Pro Leu Arg Gln Glu Cys Val Tyr Thr Gly Gly Val Thr Gly
145             150             155             160

atg cct ggg gca gct gtt gcc atc agc aac tgt gac gga ttg gcg ggc    528
Met Pro Gly Ala Ala Val Ala Ile Ser Asn Cys Asp Gly Leu Ala Gly
                165             170             175

ctc atc cgc aca gac agc acc gac ttc ttc att gag cct ctg gag cgg    576
Leu Ile Arg Thr Asp Ser Thr Asp Phe Phe Ile Glu Pro Leu Glu Arg
                180             185             190

ggc cag cag gag aag gag gcc agc ggg agg aca cat gtg gtg tac cgc    624
Gly Gln Gln Glu Lys Glu Ala Ser Gly Arg Thr His Val Val Tyr Arg
            195             200             205

cgg gag gcc gtc cag cag gag tgg gca gaa cct gac ggg gac ctg cac    672
Arg Glu Ala Val Gln Gln Glu Trp Ala Glu Pro Asp Gly Asp Leu His
    210             215             220

aat gaa gcc ttt ggc ctg gga gac ctt ccc aac ctg ctg ggc ctg gtg    720
Asn Glu Ala Phe Gly Leu Gly Asp Leu Pro Asn Leu Leu Gly Leu Val
225             230             235             240

ggg gac cag ctg ggc gac aca gag cgg aag cgg cgg cat gcc aag cca    768
Gly Asp Gln Leu Gly Asp Thr Glu Arg Lys Arg Arg His Ala Lys Pro
                245             250             255

ggc agc tac agc atc gag gtg ctg ctg gtg gtg gac gac tcg gtg gtt    816
Gly Ser Tyr Ser Ile Glu Val Leu Leu Val Val Asp Asp Ser Val Val
                260             265             270

cgc ttc cat ggc aag gag cat gtg cag aac tat gtc ctc acc ctc atg    864
Arg Phe His Gly Lys Glu His Val Gln Asn Tyr Val Leu Thr Leu Met
```

63

```
aat atc gta gat gag att tac cac gat gag tcc ctg ggg gtt cat ata    912
Asn Ile Val Asp Glu Ile Tyr His Asp Glu Ser Leu Gly Val His Ile
    290             295                 300

aat att gcc ctc gtc cgc ttg atc atg gtt ggc tac cga cag tcc ctg    960
Asn Ile Ala Leu Val Arg Leu Ile Met Val Gly Tyr Arg Gln Ser Leu
305             310                 315                 320

agc ctg atc gag cgc ggg aac ccc tca cgc agc ctg gag cag gtg tgt   1008
Ser Leu Ile Glu Arg Gly Asn Pro Ser Arg Ser Leu Glu Gln Val Cys
                325                 330                 335

cgc tgg gca cac tcc cag cag cgc cag gac ccc agc cac gct gag cac   1056
Arg Trp Ala His Ser Gln Gln Arg Gln Asp Pro Ser His Ala Glu His
            340                 345                 350

cat gac cac gtt gtg ttc ctc acc cgg cag gac ttt ggg ccc tca ggg   1104
His Asp His Val Val Phe Leu Thr Arg Gln Asp Phe Gly Pro Ser Gly
            355                 360                 365
```

β1

```
tat gca ccc gtc act ggc atg tgt cac ccc ctg agg agc tgt gcc ctc   1152
Tyr Ala Pro Val Thr Gly Met Cys His Pro Leu Arg Ser Cys Ala Leu
    370                 375                 380

aac cat gag gat ggc ttc tcc tca gcc ttc gtg ata gct cat gag acc   1200
Asn His Glu Asp Gly Phe Ser Ser Ala Phe Val Ile Ala His Glu Thr
385                 390                 395                 400

ggc cac gtg ctc ggc atg gag cat gac ggt cag ggg aat ggc tgt gca   1248
Gly His Val Leu Gly Met Glu His Asp Gly Gln Gly Asn Gly Cys Ala
                405                 410                 415

gat gag acc agc ctg ggc agc gtc atg gcg ccc ctg gtg cag gct gcc   1296
Asp Glu Thr Ser Leu Gly Ser Val Met Ala Pro Leu Val Gln Ala Ala
            420                 425                 430

ttc cac cgc ttc cat tgg tcc cgc tgc agc aag ctg gag ctc agc cgc   1344
Phe His Arg Phe His Trp Ser Arg Cys Ser Lys Leu Glu Leu Ser Arg
            435                 440                 445

tac ctc ccc tcc tac gac tgc ctc ctc gat gac ccc ttt gat cct gcc   1392
Tyr Leu Pro Ser Tyr Asp Cys Leu Leu Asp Asp Pro Phe Asp Pro Ala
    450                 455                 460

tgg ccc cag ccc cca gag ctg cct ggg atc aac tac tca atg gat gag   1440
Trp Pro Gln Pro Pro Glu Leu Pro Gly Ile Asn Tyr Ser Met Asp Glu
465                 470                 475                 480

cag tgc cgc ttt gac ttt ggc agt ggc tac cag acc tgc ttg gca ttc   1488
Gln Cys Arg Phe Asp Phe Gly Ser Gly Tyr Gln Thr Cys Leu Ala Phe
                485                 490                 495

agg acc ttt gag ccc tgc aag cag ctg tgg tgc agc cat cct gac aac   1536
Arg Thr Phe Glu Pro Cys Lys Gln Leu Trp Cys Ser His Pro Asp Asn
```

```
cmg tay ttc tgc aag acc aag aag ggg ccc ccg ctg gat ggg act gag   1584
Xaa Tyr Phe Cys Lys Thr Lys Lys Gly Pro Pro Leu Asp Gly Thr Glu
        515                 520                 525

tgt gca ccc ggc aag tgg tgc ttc aaa ggt cac tgc atc tgg aag tcg   1632
Cys Ala Pro Gly Lys Trp Cys Phe Lys Gly His Cys Ile Trp Lys Ser
    530                 535                 540

ccg gag cag aca tat ggc cag gat gga ggc tgg agc tcc tgg acc aag   1680
Pro Glu Gln Thr Tyr Gly Gln Asp Gly Gly Trp Ser Ser Trp Thr Lys
545                 550                 555                 560

ttt ggg tca tgt tcg cgg tca tgt ggg ggc ggg gtg cga tcc cgc agc   1728
Phe Gly Ser Cys Ser Arg Ser Cys Gly Gly Gly Val Arg Ser Arg Ser
                565                 570                 575

cgg agc tgc aac aac ccc tcc cca gcc tat gga ggc cgc cyg tgc tta   1776
Arg Ser Cys Asn Asn Pro Ser Pro Ala Tyr Gly Gly Arg Xaa Cys Leu
            580                 585                 590

ggg ccc atg ttc gag tac cag gtc tgc aac agc gag gag tgc cct ggg   1824
Gly Pro Met Phe Glu Tyr Gln Val Cys Asn Ser Glu Glu Cys Pro Gly
        595                 600                 605

acc tac gag gac ttc cgg gcc cag cag tgt gcc aag cgc aac tcs tac   1872
Thr Tyr Glu Asp Phe Arg Ala Gln Gln Cys Ala Lys Arg Asn Xaa Tyr
    610                 615                 620

tat gtg cac cag aat gcc aag cac ags tgg gtg ccc tac gag cct gac   1920
Tyr Val His Gln Asn Ala Lys His Xaa Trp Val Pro Tyr Glu Pro Asp
625                 630                 635                 640

gat gac gcc cag aag tgt gag ctg atc tgc cag tcg gcg gac acr ggg   1968
Asp Asp Ala Gln Lys Cys Glu Leu Ile Cys Gln Ser Ala Asp Xaa Gly
            645                 650                 655

gac gtg gtg ttc atg aac cag gtg gtt cac gat ggg aca cgc tgc agc   2016
Asp Val Val Phe Met Asn Gln Val Val His Asp Gly Thr Arg Cys Ser
            660                 665                 670

tac cgg gac cca tac agc gtc tgt gcg cgt ggc gag tgt gtg cct gtc   2064
Tyr Arg Asp Pro Tyr Ser Val Cys Ala Arg Gly Glu Cys Val Pro Val
        675                 680                 685

ggc tgt gac aag gag gtg ggg tcc atg aag gcg gat gac aag tgt gga   2112
Gly Cys Asp Lys Glu Val Gly Ser Met Lys Ala Asp Asp Lys Cys Gly
    690                 695                 700

gtc tgc ggg ggt gac aac tcc cac tgc agg act gtg aag ggg acg ctg   2160
Val Cys Gly Gly Asp Asn Ser His Cys Arg Thr Val Lys Gly Thr Leu
705                 710                 715                 720

ggc aag gcc tcc aag cag gca gga gct ctc aag ctg gtg cag atc cca   2208
Gly Lys Ala Ser Lys Gln Ala Gly Ala Leu Lys Leu Val Gln Ile Pro
```

65

```
gca ggt gcc agg cac atc cag att gag gca ctg gag aag tcc ccc cac   2256
Ala Gly Ala Arg His Ile Gln Ile Glu Ala Leu Glu Lys Ser Pro His
            740                 745                 750

cgs wyw gtg gtg aag aac cag gtc acc ggc agc ttc atc ctc aac ccc   2304
Xaa Xaa Val Val Lys Asn Gln Val Thr Gly Ser Phe Ile Leu Asn Pro
            755                 760                 765

aag ggc aag gaa gcc aca agc cgg acc ttc acc gcc atg ggc ctg gag   2352
Lys Gly Lys Glu Ala Thr Ser Arg Thr Phe Thr Ala Met Gly Leu Glu
            770                 775                 780

tgg gag gat gcg gtg gag gat gcc aag gaa agc ctc aag acc agc ggg   2400
Trp Glu Asp Ala Val Glu Asp Ala Lys Glu Ser Leu Lys Thr Ser Gly
785                 790                 795                 800

ccc ctg cct gaa gcc att gcc atc ctg gct ctc ccc cca act gag ggt   2448
Pro Leu Pro Glu Ala Ile Ala Ile Leu Ala Leu Pro Pro Thr Glu Gly
            805                 810                 815

ggc ccc cgc agc agc ctg gcc tac aag tac gtc atc cat gag gac ctg   2496
Gly Pro Arg Ser Ser Leu Ala Tyr Lys Tyr Val Ile His Glu Asp Leu
            820                 825                 830

ctg ccc ctt atc ggg agc aac aat gtg ctc ctg gag gag atg gac acc   2544
Leu Pro Leu Ile Gly Ser Asn Asn Val Leu Leu Glu Glu Met Asp Thr
            835                 840                 845

tat gag tgg gcg ctc aag agc tgg gcc ccc tgc agc aag gcc tgt gga   2592
Tyr Glu Trp Ala Leu Lys Ser Trp Ala Pro Cys Ser Lys Ala Cys Gly
            850                 855                 860

gga ggg atc cag ttc acc aaa tac ggc tgc cgg cgc aga cga gac cac   2640
Gly Gly Ile Gln Phe Thr Lys Tyr Gly Cys Arg Arg Arg Arg Asp His
865                 870                 875                 880

cac atg gtg cag cga cac ctg tgt gac cac aag aag agg ccc aag ccc   2688
His Met Val Gln Arg His Leu Cys Asp His Lys Lys Arg Pro Lys Pro
            885                 890                 895

atc cgc cgg cgc tgc aac cag cac ccg tgc tct cag cct gtg tgg gtg   2736
Ile Arg Arg Arg Cys Asn Gln His Pro Cys Ser Gln Pro Val Trp Val
            900                 905                 910

acg gag gag tgg ggt gcc tgc agc cgg agc tgt ggg aag ctg ggg gtg   2784
Thr Glu Glu Trp Gly Ala Cys Ser Arg Ser Cys Gly Lys Leu Gly Val
            915                 920                 925

cag aca cgg ggg ata cag tgc ctg ctg ccc ctc tcc aat gga acc cac   2832
Gln Thr Arg Gly Ile Gln Cys Leu Leu Pro Leu Ser Asn Gly Thr His
            930                 935                 940

aag gtc atg ccg gcc aaa gcc tgc gcc ggg gac cgg cct gag gcc cga   2880
Lys Val Met Pro Ala Lys Ala Cys Ala Gly Asp Arg Pro Glu Ala Arg
```

66

```
cgg ccc tgt ctc cga gtg ccc tgc cca gcc cag tgg agg ctg gga gcc   2928
Arg Pro Cys Leu Arg Val Pro Cys Pro Ala Gln Trp Arg Leu Gly Ala
             965             970             975

tgg tcc cag tgc tct gcc acc tgt gga gag ggc atc cag cag cgg cag   2976
Trp Ser Gln Cys Ser Ala Thr Cys Gly Glu Gly Ile Gln Gln Arg Gln
             980             985             990

gtg gtg tgc agg acc aac gcc aac agc ctc ggg cat tgc gag ggg gat   3024
Val Val Cys Arg Thr Asn Ala Asn Ser Leu Gly His Cys Glu Gly Asp
             995             1000            1005

agg cca gac act gtc cag gtc tgc arc ctg ccc gcc tgt gga gga aat   3072
Arg Pro Asp Thr Val Gln Val Cys Xaa Leu Pro Ala Cys Gly Gly Asn
    1010            1015            1020

cac cag aac tcc acg gtg agg gcc gat gtc tgg gaa ctt ggg acg cca   3120
His Gln Asn Ser Thr Val Arg Ala Asp Val Trp Glu Leu Gly Thr Pro
1025            1030            1035            1040

gag ggg cag tgg gtg cca caa tct gra ccc cta cat ccc att aac aag   3168
Glu Gly Gln Trp Val Pro Gln Ser Xaa Pro Leu His Pro Ile Asn Lys
             1045            1050            1055

ata tca tca atg tgt gca gcg gag ccc tgc acg gga gac agg tct gtc   3216
Ile Ser Ser Met Cys Ala Ala Glu Pro Cys Thr Gly Asp Arg Ser Val
             1060            1065            1070

ttc tgc cag atg gaa gtg ctc gat cgc tac tgc tcc att ccc ggc tac   3264
Phe Cys Gln Met Glu Val Leu Asp Arg Tyr Cys Ser Ile Pro Gly Tyr
             1075            1080            1085

cac cgg ctc tgc tgt gtg tcc tgc atc aag aag gcc tcg ggc ccc aac   3312
His Arg Leu Cys Cys Val Ser Cys Ile Lys Lys Ala Ser Gly Pro Asn
             1090            1095            1100

cct ggc cca gac cct ggc cca acc tca ctg ccc ccc ttc tcc act cct   3360
Pro Gly Pro Asp Pro Gly Pro Thr Ser Leu Pro Pro Phe Ser Thr Pro
1105            1110            1115            1120

gga agc ccc tta cca gga ccc cag gac cct gca gat gct gca gag cct   3408
Gly Ser Pro Leu Pro Gly Pro Gln Asp Pro Ala Asp Ala Ala Glu Pro
             1125            1130            1135

cct gga aag cca acg gga tca gag gac cat cag cat ggc cga gcc aca   3456
Pro Gly Lys Pro Thr Gly Ser Glu Asp His Gln His Gly Arg Ala Thr
             1140            1145            1150

cag ctc cca gga gct ctg gat aca agc tcc cca ggg acc cag cat ccc   3504
Gln Leu Pro Gly Ala Leu Asp Thr Ser Ser Pro Gly Thr Gln His Pro
             1155            1160            1165

ttt gcc cct gag aca cca atc cct gga gca tcc tgg agc atc tcc cct   3552
Phe Ala Pro Glu Thr Pro Ile Pro Gly Ala Ser Trp Ser Ile Ser Pro
```

β1

```
acc acc ccc ggg ggg ctg cct tgg ggc tgg act cag aca cct acg cca   3600
Thr Thr Pro Gly Gly Leu Pro Trp Gly Trp Thr Gln Thr Pro Thr Pro
1185                    1190                    1195                    1200

gtc cct gag gac aaa ggg caa cct gga gaa gac ctg aga cat ccc ggc   3648
Val Pro Glu Asp Lys Gly Gln Pro Gly Glu Asp Leu Arg His Pro Gly
                    1205                    1210                    1215

acc agc ctc cct gct gac ctg ccc ggg cgg ccg ccc gag ccc tgc cat   3696
Thr Ser Leu Pro Ala Asp Leu Pro Gly Arg Pro Pro Glu Pro Cys His
                1220                    1225                    1230

ccc act ggc acg ttt aca ctc tgt gta ctg ccc cgt gac tcc cag ctc   3744
Pro Thr Gly Thr Phe Thr Leu Cys Val Leu Pro Arg Asp Ser Gln Leu
                1235                    1240                    1245

aga gga cac aca tag                                               3759
Arg Gly His Thr *
        1250
```

β1

<400> 20

```
Met Ala Pro Leu Arg Ala Leu Leu Ser Tyr Leu Leu Pro Leu His Cys
 1               5                   10                  15
Ala Leu Cys Thr Ala Ala Gly Ser Arg Thr Pro Glu Leu His Leu Ser
            20                  25                  30
Gly Lys Leu Ser Asp Tyr Gly Val Thr Val Pro Cys Ser Thr Asp Phe
            35                  40                  45
Arg Gly Arg Phe Leu Ser His Val Val Ser Gly Pro Ala Ala Ala Ser
        50                  55                  60
Ala Gly Ser Met Val Val Asp Thr Pro Pro Thr Leu Pro Arg His Ser
65                  70                  75                      80
Ser His Leu Arg Val Ala Arg Ser Pro Leu His Pro Gly Gly Thr Leu
                85                  90                  95
Trp Pro Gly Arg Val Gly Arg His Ser Leu Tyr Phe Asn Val Thr Val
                100                 105                 110
Phe Gly Lys Glu Leu His Leu Arg Leu Arg Pro Asn Arg Arg Leu Val
            115                 120                 125
Val Pro Gly Ser Ser Val Glu Trp Gln Glu Asp Phe Arg Glu Leu Phe
        130                 135                 140
Arg Gln Pro Leu Arg Gln Glu Cys Val Tyr Thr Gly Gly Val Thr Gly
145                 150                 155                 160
Met Pro Gly Ala Ala Val Ala Ile Ser Asn Cys Asp Gly Leu Ala Gly
                165                 170                 175
Leu Ile Arg Thr Asp Ser Thr Asp Phe Phe Ile Glu Pro Leu Glu Arg
                180                 185                 190
Gly Gln Gln Glu Lys Glu Ala Ser Gly Arg Thr His Val Val Tyr Arg
            195                 200                 205
Arg Glu Ala Val Gln Gln Glu Trp Ala Glu Pro Asp Gly Asp Leu His
```

68

```
         210                     215                     220
Asn Glu Ala Phe Gly Leu Gly Asp Leu Pro Asn Leu Leu Gly Leu Val
225                     230                     235                     240
Gly Asp Gln Leu Gly Asp Thr Glu Arg Lys Arg Arg His Ala Lys Pro
                    245                     250                     255
Gly Ser Tyr Ser Ile Glu Val Leu Leu Val Val Asp Asp Ser Val Val
                    260                     265                     270
Arg Phe His Gly Lys Glu His Val Gln Asn Tyr Val Leu Thr Leu Met
                    275                     280                     285
Asn Ile Val Asp Glu Ile Tyr His Asp Glu Ser Leu Gly Val His Ile
                    290                     295                     300
Asn Ile Ala Leu Val Arg Leu Ile Met Val Gly Tyr Arg Gln Ser Leu
305                     310                     315                     320
Ser Leu Ile Glu Arg Gly Asn Pro Ser Arg Ser Leu Glu Gln Val Cys
                    325                     330                     335
Arg Trp Ala His Ser Gln Gln Arg Gln Asp Pro Ser His Ala Glu His
                    340                     345                     350
His Asp His Val Val Phe Leu Thr Arg Gln Asp Phe Gly Pro Ser Gly
                    355                     360                     365
Tyr Ala Pro Val Thr Gly Met Cys His Pro Leu Arg Ser Cys Ala Leu
                    370                     375                     380
Asn His Glu Asp Gly Phe Ser Ser Ala Phe Val Ile Ala His Glu Thr
385                     390                     395                     400
Gly His Val Leu Gly Met Glu His Asp Gly Gln Gly Asn Gly Cys Ala
                    405                     410                     415
Asp Glu Thr Ser Leu Gly Ser Val Met Ala Pro Leu Val Gln Ala Ala
                    420                     425                     430
Phe His Arg Phe His Trp Ser Arg Cys Ser Lys Leu Glu Leu Ser Arg
                    435                     440                     445
Tyr Leu Pro Ser Tyr Asp Cys Leu Leu Asp Asp Pro Phe Asp Pro Ala
                    450                     455                     460
Trp Pro Gln Pro Pro Glu Leu Pro Gly Ile Asn Tyr Ser Met Asp Glu
465                     470                     475                     480
Gln Cys Arg Phe Asp Phe Gly Ser Gly Tyr Gln Thr Cys Leu Ala Phe
                    485                     490                     495
Arg Thr Phe Glu Pro Cys Lys Gln Leu Trp Cys Ser His Pro Asp Asn
                    500                     505                     510
Pro Tyr Phe Cys Lys Thr Lys Lys Gly Pro Pro Leu Asp Gly Thr Glu
                    515                     520                     525
Cys Ala Pro Gly Lys Trp Cys Phe Lys Gly His Cys Ile Trp Lys Ser
                    530                     535                     540
Pro Glu Gln Thr Tyr Gly Gln Asp Gly Gly Trp Ser Ser Trp Thr Lys
545                     550                     555                     560
Phe Gly Ser Cys Ser Arg Ser Cys Gly Gly Gly Val Arg Ser Arg Ser
                    565                     570                     575
Arg Ser Cys Asn Asn Pro Ser Pro Ala Tyr Gly Gly Arg Pro Cys Leu
                    580                     585                     590
Gly Pro Met Phe Glu Tyr Gln Val Cys Asn Ser Glu Glu Cys Pro Gly
                    595                     600                     605
Thr Tyr Glu Asp Phe Arg Ala Gln Gln Cys Ala Lys Arg Asn Ser Tyr
                    610                     615                     620
Tyr Val His Gln Asn Ala Lys His Ser Trp Val Pro Tyr Glu Pro Asp
625                     630                     635                     640
Asp Asp Ala Gln Lys Cys Glu Leu Ile Cys Gln Ser Ala Asp Thr Gly
                    645                     650                     655
Asp Val Val Phe Met Asn Gln Val Val His Asp Gly Thr Arg Cys Ser
```

69

```
              660                   665                   670
Tyr Arg Asp Pro Tyr Ser Val Cys Ala Arg Gly Glu Cys Val Pro Val
         675             680                   685
Gly Cys Asp Lys Glu Val Gly Ser Met Lys Ala Asp Asp Lys Cys Gly
     690             695                   700
Val Cys Gly Gly Asp Asn Ser His Cys Arg Thr Val Lys Gly Thr Leu
705                 710                   715                 720
Gly Lys Ala Ser Lys Gln Ala Gly Ala Leu Lys Leu Val Gln Ile Pro
                 725                   730                   735
Ala Gly Ala Arg His Ile Gln Ile Glu Ala Leu Glu Lys Ser Pro His
             740                   745                   750
Arg Ser Val Val Lys Asn Gln Val Thr Gly Ser Phe Ile Leu Asn Pro
             755                   760                   765
Lys Gly Lys Glu Ala Thr Ser Arg Thr Phe Thr Ala Met Gly Leu Glu
         770                   775                   780
Trp Glu Asp Ala Val Glu Asp Ala Lys Glu Ser Leu Lys Thr Ser Gly
785                 790                   795                 800
Pro Leu Pro Glu Ala Ile Ala Ile Leu Ala Leu Pro Pro Thr Glu Gly
                 805                   810                   815
Gly Pro Arg Ser Ser Leu Ala Tyr Lys Tyr Val Ile His Glu Asp Leu
             820                   825                   830
Leu Pro Leu Ile Gly Ser Asn Asn Val Leu Leu Glu Glu Met Asp Thr
             835                   840                   845
Tyr Glu Trp Ala Leu Lys Ser Trp Ala Pro Cys Ser Lys Ala Cys Gly
         850                   855                   860
Gly Gly Ile Gln Phe Thr Lys Tyr Gly Cys Arg Arg Arg Arg Asp His
865                 870                   875                 880
His Met Val Gln Arg His Leu Cys Asp His Lys Lys Arg Pro Lys Pro
                 885                   890                   895
Ile Arg Arg Arg Cys Asn Gln His Pro Cys Ser Gln Pro Val Trp Val
             900                   905                   910
Thr Glu Glu Trp Gly Ala Cys Ser Arg Ser Cys Gly Lys Leu Gly Val
             915                   920                   925
Gln Thr Arg Gly Ile Gln Cys Leu Leu Pro Leu Ser Asn Gly Thr His
             930                   935                   940
Lys Val Met Pro Ala Lys Ala Cys Ala Gly Asp Arg Pro Glu Ala Arg
945                 950                   955                 960
Arg Pro Cys Leu Arg Val Pro Cys Pro Ala Gln Trp Arg Leu Gly Ala
                 965                   970                   975
Trp Ser Gln Cys Ser Ala Thr Cys Gly Glu Gly Ile Gln Gln Arg Gln
             980                   985                   990
Val Val Cys Arg Thr Asn Ala Asn Ser Leu Gly His Cys Glu Gly Asp
         995                   1000                  1005
Arg Pro Asp Thr Val Gln Val Cys Ser Leu Pro Ala Cys Gly Gly Asn
     1010                  1015                  1020
His Gln Asn Ser Thr Val Arg Ala Asp Val Trp Glu Leu Gly Thr Pro
1025                 1030                  1035                1040
Glu Gly Gln Trp Val Pro Gln Ser Gly Pro Leu His Pro Ile Asn Lys
                 1045                  1050                  1055
Ile Ser Ser Met Cys Ala Ala Glu Pro Cys Thr Gly Asp Arg Ser Val
             1060                  1065                  1070
Phe Cys Gln Met Glu Val Leu Asp Arg Tyr Cys Ser Ile Pro Gly Tyr
         1075                  1080                  1085
His Arg Leu Cys Cys Val Ser Cys Ile Lys Lys Ala Ser Gly Pro Asn
     1090                  1095                  1100
Pro Gly Pro Asp Pro Gly Pro Thr Ser Leu Pro Pro Phe Ser Thr Pro
```

β1

```
        1105                    1110                 1115                    1120
      Gly Ser Pro Leu Pro Gly Pro Gln Asp Pro Ala Asp Ala Ala Glu Pro
                         1125              1130              1135
      Pro Gly Lys Pro Thr Gly Ser Glu Asp His Gln His Gly Arg Ala Thr
                     1140              1145              1150
      Gln Leu Pro Gly Ala Leu Asp Thr Ser Ser Pro Gly Thr Gln His Pro
                 1155              1160              1165
      Phe Ala Pro Glu Thr Pro Ile Pro Gly Ala Ser Trp Ser Ile Ser Pro
             1170              1175              1180
      Thr Thr Pro Gly Gly Leu Pro Trp Gly Trp Thr Gln Thr Pro Thr Pro
      1185              1190              1195              1200
      Val Pro Glu Asp Lys Gly Gln Pro Gly Glu Asp Leu Arg His Pro Gly
                     1205              1210              1215
      Thr Ser Leu Pro Ala Asp Leu Pro Gly Arg Pro Pro Glu Pro Cys His
                 1220              1225              1230
      Pro Thr Gly Thr Phe Thr Leu Cys Val Leu Pro Arg Asp Ser Gln Leu
             1235              1240              1245
      Arg Gly His Thr
             1250
```

```
atg gct cca ctc cgc gcg ctg ctg tcc tac ctg ctg cct ttg cac tgt      48
Met Ala Pro Leu Arg Ala Leu Leu Ser Tyr Leu Leu Pro Leu His Cys
 1               5                  10                  15


gcg ctc tgc rcc gcc gcg ggc agc cgg acc cca gag ctg cac ctc tct      96
Ala Leu Cys Xaa Ala Ala Gly Ser Arg Thr Pro Glu Leu His Leu Ser
                 20                  25                  30


gga aag ctc agt gac tat ggt gtg aca gtg ccc tgc agc aca gac ttt     144
Gly Lys Leu Ser Asp Tyr Gly Val Thr Val Pro Cys Ser Thr Asp Phe
                 35                  40                  45


cgg gga cgc ttc ctc tcc cac gtg gtg tct ggc cca gca gca gcc tct     192
Arg Gly Arg Phe Leu Ser His Val Val Ser Gly Pro Ala Ala Ala Ser
         50                  55                  60


gca ggg agc atg gta gtg gac acg cca ccc aca cta cca cga cac tcc     240
Ala Gly Ser Met Val Val Asp Thr Pro Pro Thr Leu Pro Arg His Ser
 65                  70                  75                  80


agt cac ctc cgg gtg gct cgc agc cct ctg cac cca gga ggg acc ctg     288
Ser His Leu Arg Val Ala Arg Ser Pro Leu His Pro Gly Gly Thr Leu
                 85                  90                  95


tgg cct ggc agg gtg ggg cgc cac tcc ctc tac ttc aat gtc act gtt     336
```

71

```
            Trp Pro Gly Arg Val Gly Arg His Ser Leu Tyr Phe Asn Val Thr Val
                    100                 105                 110

ttc ggg aag gaa ctg cac ttg cgc ctg cgg ccc aat cgg agg ttg gta   384
Phe Gly Lys Glu Leu His Leu Arg Leu Arg Pro Asn Arg Arg Leu Val
        115                 120                 125

gtg cca gga tcc tca gtg gag tgg cag gag gat ttt cgg gag ctg ttc   432
Val Pro Gly Ser Ser Val Glu Trp Gln Glu Asp Phe Arg Glu Leu Phe
        130                 135                 140

cgg cag ccc tta cgg cag gag tgt gtg tac act gga ggt gtc act gga   480
Arg Gln Pro Leu Arg Gln Glu Cys Val Tyr Thr Gly Gly Val Thr Gly
145                 150                 155                 160

atg cct ggg gca gct gtt gcc atc agc aac tgt gac gga ttg gcg ggc   528
Met Pro Gly Ala Ala Val Ala Ile Ser Asn Cys Asp Gly Leu Ala Gly
                    165                 170                 175

ctc atc cgc aca gac agc acc gac ttc ttc att gag cct ctg gag cgg   576
Leu Ile Arg Thr Asp Ser Thr Asp Phe Phe Ile Glu Pro Leu Glu Arg
                    180                 185                 190

ggc cag cag gag aag gag gcc agc ggg agg aca cat gtg gtg tac cgc   624
Gly Gln Gln Glu Lys Glu Ala Ser Gly Arg Thr His Val Val Tyr Arg
        195                 200                 205

cgg gag gcc gtc cag cag gag tgg gca gaa cct gac ggg gac ctg cac   672
Arg Glu Ala Val Gln Gln Glu Trp Ala Glu Pro Asp Gly Asp Leu His
        210                 215                 220

aat gaa gcc ttt ggc ctg gga gac ctt ccc aac ctg ctg ggc ctg gtg   720
Asn Glu Ala Phe Gly Leu Gly Asp Leu Pro Asn Leu Leu Gly Leu Val
225                 230                 235                 240

ggg gac cag ctg ggc gac aca gag cgg aag cgg cgg cat gcc aag cca   768
Gly Asp Gln Leu Gly Asp Thr Glu Arg Lys Arg Arg His Ala Lys Pro
                    245                 250                 255

ggc agc tac agc atc gag gtg ctg ctg gtg gtg gac gac tcg gtg gtt   816
Gly Ser Tyr Ser Ile Glu Val Leu Leu Val Val Asp Asp Ser Val Val
                    260                 265                 270

cgc ttc cat ggc aag gag cat gtg cag aac tat gtc ctc acc ctc atg   864
Arg Phe His Gly Lys Glu His Val Gln Asn Tyr Val Leu Thr Leu Met
        275                 280                 285

aat atc gta gat gag att tac cac gat gag tcc ctg ggg gtt cat ata   912
Asn Ile Val Asp Glu Ile Tyr His Asp Glu Ser Leu Gly Val His Ile
        290                 295                 300

aat att gcc ctc gtc cgc ttg atc atg gtt ggc tac cga cag tcc ctg   960
Asn Ile Ala Leu Val Arg Leu Ile Met Val Gly Tyr Arg Gln Ser Leu
305                 310                 315                 320

agc ctg atc gag cgc ggg aac ccc tca cgc agc ctg gag cag gtg tgt   1008
```

72

```
        Ser Leu Ile Glu Arg Gly Asn Pro Ser Arg Ser Leu Glu Gln Val Cys
                     325                 330             335

        cgc tgg gca cac tcc cag cag cgc cag gac ccc agc cac gct gag cac   1056
        Arg Trp Ala His Ser Gln Gln Arg Gln Asp Pro Ser His Ala Glu His
                     340                 345             350

        cat gac cac gtt gtg ttc ctc acc cgg cag gac ttt ggg ccc tca ggg   1104
        His Asp His Val Val Phe Leu Thr Arg Gln Asp Phe Gly Pro Ser Gly
                     355                 360             365

        tat gca ccc gtc act ggc atg tgt cac ccc ctg agg agc tgt gcc ctc   1152
        Tyr Ala Pro Val Thr Gly Met Cys His Pro Leu Arg Ser Cys Ala Leu
                     370                 375             380

        aac cat gag gat ggc ttc tcc tca gcc ttc gtg ata gct cat gag acc   1200
        Asn His Glu Asp Gly Phe Ser Ser Ala Phe Val Ile Ala His Glu Thr
        385                 390                 395             400

        ggc cac gtg ctc ggc atg gag cat gac ggt cag ggg aat ggc tgt gca   1248
        Gly His Val Leu Gly Met Glu His Asp Gly Gln Gly Asn Gly Cys Ala
                     405                 410             415
```

B|
```
        gat gag acc agc ctg ggc agc gtc atg gcg ccc ctg gtg cag gct gcc   1296
        Asp Glu Thr Ser Leu Gly Ser Val Met Ala Pro Leu Val Gln Ala Ala
                     420                 425             430

        ttc cac cgc ttc cat tgg tcc cgc tgc agc aag ctg gag ctc agc cgc   1344
        Phe His Arg Phe His Trp Ser Arg Cys Ser Lys Leu Glu Leu Ser Arg
                     435                 440             445

        tac ctc ccc tcc tac gac tgc ctc ctc gat gac ccc ttt gat cct gcc   1392
        Tyr Leu Pro Ser Tyr Asp Cys Leu Leu Asp Asp Pro Phe Asp Pro Ala
                     450                 455             460

        tgg ccc cag ccc cca gag ctg cct ggg atc aac tac tca atg gat gag   1440
        Trp Pro Gln Pro Pro Glu Leu Pro Gly Ile Asn Tyr Ser Met Asp Glu
        465                 470                 475             480

        cag tgc cgc ttt gac ttt ggc agt ggc tac cag acc tgc ttg gca ttc   1488
        Gln Cys Arg Phe Asp Phe Gly Ser Gly Tyr Gln Thr Cys Leu Ala Phe
                     485                 490             495

        agg acc ttt gag ccc tgc aag cag ctg tgg tgc agc cat cct gac aac   1536
        Arg Thr Phe Glu Pro Cys Lys Gln Leu Trp Cys Ser His Pro Asp Asn
                     500                 505             510

        cmg tay ttc tgc aag acc aag aag ggg ccc ccg ctg gat ggg act gag   1584
        Xaa Tyr Phe Cys Lys Thr Lys Lys Gly Pro Pro Leu Asp Gly Thr Glu
                     515                 520             525

        tgt gca ccc ggc aag tgg tgc ttc aaa ggt cac tgc atc tgg aag tcg   1632
        Cys Ala Pro Gly Lys Trp Cys Phe Lys Gly His Cys Ile Trp Lys Ser
                     530                 535             540

        ccg gag cag aca tat ggc cag gat gga ggc tgg agc tcc tgg acc aag   1680
```

73

```
Pro Glu Gln Thr Tyr Gly Gln Asp Gly Gly Trp Ser Ser Trp Thr Lys
545             550             555             560

ttt ggg tca tgt tcg cgg tca tgt ggg ggc ggg gtg cga tcc cgc agc    1728
Phe Gly Ser Cys Ser Arg Ser Cys Gly Gly Gly Val Arg Ser Arg Ser
                565             570             575

cgg agc tgc aac aac ccc tcc cca gcc tat gga ggc cgc cyg tgc tta    1776
Arg Ser Cys Asn Asn Pro Ser Pro Ala Tyr Gly Gly Arg Xaa Cys Leu
                580             585             590

ggg ccc atg ttc gag tac cag gtc tgc aac agc gag gag tgc cct ggg    1824
Gly Pro Met Phe Glu Tyr Gln Val Cys Asn Ser Glu Glu Cys Pro Gly
            595             600             605

acc tac gag gac ttc cgg gcc cag cag tgt gcc aag cgc aac tcs tac    1872
Thr Tyr Glu Asp Phe Arg Ala Gln Gln Cys Ala Lys Arg Asn Xaa Tyr
        610             615             620

tat gtg cac cag aat gcc aag cac ags tgg gtg ccc tac gag cct gac    1920
Tyr Val His Gln Asn Ala Lys His Xaa Trp Val Pro Tyr Glu Pro Asp
625             630             635             640

gat gac gcc cag aag tgt gag ctg atc tgc cag tcg gcg gac acr ggg    1968
Asp Asp Ala Gln Lys Cys Glu Leu Ile Cys Gln Ser Ala Asp Xaa Gly
                645             650             655

gac gtg gtg ttc atg aac cag gtg gtt cac gat ggg aca cgc tgc agc    2016
Asp Val Val Phe Met Asn Gln Val Val His Asp Gly Thr Arg Cys Ser
            660             665             670

tac cgg gac cca tac agc gtc tgt gcg cgt ggc gag tgt gtg cct gtc    2064
Tyr Arg Asp Pro Tyr Ser Val Cys Ala Arg Gly Glu Cys Val Pro Val
        675             680             685

ggc tgt gac aag gag gtg ggg tcc atg aag gcg gat gac aag tgt gga    2112
Gly Cys Asp Lys Glu Val Gly Ser Met Lys Ala Asp Asp Lys Cys Gly
    690             695             700

gtc tgc ggg ggt gac aac tcc cac tgc agg act gtg aag ggg acg ctg    2160
Val Cys Gly Gly Asp Asn Ser His Cys Arg Thr Val Lys Gly Thr Leu
705             710             715             720

ggc aag gcc tcc aag cag gca gga gct ctc aag ctg gtg cag atc cca    2208
Gly Lys Ala Ser Lys Gln Ala Gly Ala Leu Lys Leu Val Gln Ile Pro
            725             730             735

gca ggt gcc agg cac atc cag att gag gca ctg gag aag tcc ccc cac    2256
Ala Gly Ala Arg His Ile Gln Ile Glu Ala Leu Glu Lys Ser Pro His
        740             745             750

cgs wyw gtg gtg aag aac cag gtc acc ggc agc ttc atc ctc aac ccc    2304
Xaa Xaa Val Val Lys Asn Gln Val Thr Gly Ser Phe Ile Leu Asn Pro
        755             760             765

aag ggc aag gaa gcc aca agc cgg acc ttc acc gcc atg ggc ctg gag    2352
```

74

```
        Lys Gly Lys Glu Ala Thr Ser Arg Thr Phe Thr Ala Met Gly Leu Glu
            770                 775                 780

        tgg gag gat gcg gtg gag gat gcc aag gaa agc ctc aag acc agc ggg    2400
        Trp Glu Asp Ala Val Glu Asp Ala Lys Glu Ser Leu Lys Thr Ser Gly
        785                 790                 795                 800

        ccc ctg cct gaa gcc att gcc atc ctg gct ctc ccc cca act gag ggt    2448
        Pro Leu Pro Glu Ala Ile Ala Ile Leu Ala Leu Pro Pro Thr Glu Gly
                        805                 810                 815

        ggc ccc cgc agc agc ctg gcc tac aag tac gtc atc cat gag gac ctg    2496
        Gly Pro Arg Ser Ser Leu Ala Tyr Lys Tyr Val Ile His Glu Asp Leu
                        820                 825                 830

        ctg ccc ctt atc ggg agc aac aat gtg ctc ctg gag gag atg gac acc    2544
        Leu Pro Leu Ile Gly Ser Asn Asn Val Leu Leu Glu Glu Met Asp Thr
                        835                 840                 845

        tat gag tgg gcg ctc aag agc tgg gcc ccc tgc agc aag gcc tgt gga    2592
        Tyr Glu Trp Ala Leu Lys Ser Trp Ala Pro Cys Ser Lys Ala Cys Gly
            850                 855                 860

        gga ggg atc cag ttc acc aaa tac ggc tgc cgg cgc aga cga gac cac    2640
        Gly Gly Ile Gln Phe Thr Lys Tyr Gly Cys Arg Arg Arg Arg Asp His
        865                 870                 875                 880

        cac atg gtg cag cga cac ctg tgt gac cac aag aag agg ccc aag ccc    2688
        His Met Val Gln Arg His Leu Cys Asp His Lys Lys Arg Pro Lys Pro
                        885                 890                 895

        atc cgc cgg cgc tgc aac cag cac ccg tgc tct cag cct gtg tgg gtg    2736
        Ile Arg Arg Arg Cys Asn Gln His Pro Cys Ser Gln Pro Val Trp Val
                        900                 905                 910

        acg gag gag tgg ggt gcc tgc agc cgg agc tgt ggg aag ctg ggg gtg    2784
        Thr Glu Glu Trp Gly Ala Cys Ser Arg Ser Cys Gly Lys Leu Gly Val
                        915                 920                 925

        cag aca cgg ggg ata cag tgc ctg ctg ccc ctc tcc aat gga acc cac    2832
        Gln Thr Arg Gly Ile Gln Cys Leu Leu Pro Leu Ser Asn Gly Thr His
                        930                 935                 940

        aag gtc atg ccg gcc aaa gcc tgc gcc ggg gac cgg cct gag gcc cga    2880
        Lys Val Met Pro Ala Lys Ala Cys Ala Gly Asp Arg Pro Glu Ala Arg
        945                 950                 955                 960

        cgg ccc tgt ctc cga gtg ccc tgc cca gcc cag tgg agg ctg gga gcc    2928
        Arg Pro Cys Leu Arg Val Pro Cys Pro Ala Gln Trp Arg Leu Gly Ala
                        965                 970                 975

        tgg tcc cag tgc tct gcc acc tgt gga gag ggc atc cag cag cgg cag    2976
        Trp Ser Gln Cys Ser Ala Thr Cys Gly Glu Gly Ile Gln Gln Arg Gln
                        980                 985                 990

        gtg gtg tgc agg acc aac gcc aac agc ctc ggg cat tgc gag ggg gat    3024
```

75

```
              Val Val Cys Arg Thr Asn Ala Asn Ser Leu Gly His Cys Glu Gly Asp
                      995             1000            1005

agg cca gac act gtc cag gtc tgc arc ctg ccc gcc tgt gga gga aat      3072
Arg Pro Asp Thr Val Gln Val Cys Xaa Leu Pro Ala Cys Gly Gly Asn
        1010            1015            1020

cac cag aac tcc acg gtg agg gcc gat gtc tgg gaa ctt ggg acg cca      3120
His Gln Asn Ser Thr Val Arg Ala Asp Val Trp Glu Leu Gly Thr Pro
1025            1030            1035            1040

gag ggg cag tgg gtg cca caa tct gra ccc cta cat ccc att aac aag      3168
Glu Gly Gln Trp Val Pro Gln Ser Xaa Pro Leu His Pro Ile Asn Lys
                1045            1050            1055

ata tca tca acg gag ccc tgc acg gga gac agg tct gtc ttc tgc cag      3216
Ile Ser Ser Thr Glu Pro Cys Thr Gly Asp Arg Ser Val Phe Cys Gln
            1060            1065            1070

atg gaa gtg ctc gat cgc tac tgc tcc att ccc ggc tac cac cgg ctc      3264
Met Glu Val Leu Asp Arg Tyr Cys Ser Ile Pro Gly Tyr His Arg Leu
        1075            1080            1085

tgc tgt gtg tcc tgc atc aag aag gcc tcg ggc ccc aac cct ggc cca      3312
Cys Cys Val Ser Cys Ile Lys Lys Ala Ser Gly Pro Asn Pro Gly Pro
        1090            1095            1100

gac cct ggc cca acc tca ctg ccc ccc ttc tcc act cct gga agc ccc      3360
Asp Pro Gly Pro Thr Ser Leu Pro Pro Phe Ser Thr Pro Gly Ser Pro
1105            1110            1115            1120

tta cca gga ccc cag gac cct gca gat gct gca gag cct cct gga aag      3408
Leu Pro Gly Pro Gln Asp Pro Ala Asp Ala Ala Glu Pro Pro Gly Lys
                1125            1130            1135

cca acg gga tca gag gac cat cag cat ggc cga gcc aca cag ctc cca      3456
Pro Thr Gly Ser Glu Asp His Gln His Gly Arg Ala Thr Gln Leu Pro
            1140            1145            1150

gga gct ctg gat aca agc tcc cca ggg acc cag cat ccc ttt gcc cct      3504
Gly Ala Leu Asp Thr Ser Ser Pro Gly Thr Gln His Pro Phe Ala Pro
            1155            1160            1165

gag aca cca atc cct gga gca tcc tgg agc atc tcc cct acc acc ccc      3552
Glu Thr Pro Ile Pro Gly Ala Ser Trp Ser Ile Ser Pro Thr Thr Pro
        1170            1175            1180

ggg ggg ctg cct tgg ggc tgg act cag aca cct acg cca gtc cct gag      3600
Gly Gly Leu Pro Trp Gly Trp Thr Gln Thr Pro Thr Pro Val Pro Glu
1185            1190            1195            1200

gac aaa ggg caa cct gga gaa gac ctg aga cat ccc ggc acc agc ctc      3648
Asp Lys Gly Gln Pro Gly Glu Asp Leu Arg His Pro Gly Thr Ser Leu
                1205            1210            1215

cct gct gac ctg ccc ggg cgg ccg ccc gag ccc tgc cat ccc act ggc      3696
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        Pro Ala Asp Leu Pro Gly Arg Pro Pro Glu Pro Cys His Pro Thr Gly
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acg ttt aca ctc tgt gta ctg ccc cgt gac tcc cag ctc aga gga cac      3744
Thr Phe Thr Leu Cys Val Leu Pro Arg Asp Ser Gln Leu Arg Gly His
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aca tag                                                              3750
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Gly Lys Leu Ser Asp Tyr Gly Val Thr Val Pro Cys Ser Thr Asp Phe
            35                40                45
Arg Gly Arg Phe Leu Ser His Val Val Ser Gly Pro Ala Ala Ala Ser
    50                55                60
Ala Gly Ser Met Val Val Asp Thr Pro Pro Thr Leu Pro Arg His Ser
65              70                75                    80
Ser His Leu Arg Val Ala Arg Ser Pro Leu His Pro Gly Gly Thr Leu
            85                90                95
Trp Pro Gly Arg Val Gly Arg His Ser Leu Tyr Phe Asn Val Thr Val
            100               105               110
Phe Gly Lys Glu Leu His Leu Arg Leu Arg Pro Asn Arg Arg Leu Val
            115               120               125
Val Pro Gly Ser Ser Val Glu Trp Gln Glu Asp Phe Arg Glu Leu Phe
    130               135               140
Arg Gln Pro Leu Arg Gln Glu Cys Val Tyr Thr Gly Gly Val Thr Gly
145               150               155                   160
Met Pro Gly Ala Ala Val Ala Ile Ser Asn Cys Asp Gly Leu Ala Gly
            165               170               175
Leu Ile Arg Thr Asp Ser Thr Asp Phe Phe Ile Glu Pro Leu Glu Arg
            180               185               190
Gly Gln Gln Glu Lys Glu Ala Ser Gly Arg Thr His Val Val Tyr Arg
            195               200               205
Arg Glu Ala Val Gln Gln Glu Trp Ala Glu Pro Asp Gly Asp Leu His
    210               215               220
Asn Glu Ala Phe Gly Leu Gly Asp Leu Pro Asn Leu Leu Gly Leu Val
225               230               235                   240
Gly Asp Gln Leu Gly Asp Thr Glu Arg Lys Arg Arg His Ala Lys Pro
            245               250               255
Gly Ser Tyr Ser Ile Glu Val Leu Leu Val Val Asp Asp Ser Val Val
            260               265               270
Arg Phe His Gly Lys Glu His Val Gln Asn Tyr Val Leu Thr Leu Met
            275               280               285
Asn Ile Val Asp Glu Ile Tyr His Asp Glu Ser Leu Gly Val His Ile
    290               295               300
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77

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Asn Ile Ala Leu Val Arg Leu Ile Met Val Gly Tyr Arg Gln Ser Leu
305             310             315             320
Ser Leu Ile Glu Arg Gly Asn Pro Ser Arg Ser Leu Glu Gln Val Cys
            325             330             335
Arg Trp Ala His Ser Gln Gln Arg Gln Asp Pro Ser His Ala Glu His
            340             345             350
His Asp His Val Val Phe Leu Thr Arg Gln Asp Phe Gly Pro Ser Gly
            355             360             365
Tyr Ala Pro Val Thr Gly Met Cys His Pro Leu Arg Ser Cys Ala Leu
    370             375             380
Asn His Glu Asp Gly Phe Ser Ser Ala Phe Val Ile Ala His Glu Thr
385             390             395             400
Gly His Val Leu Gly Met Glu His Asp Gly Gln Gly Asn Gly Cys Ala
            405             410             415
Asp Glu Thr Ser Leu Gly Ser Val Met Ala Pro Leu Val Gln Ala Ala
            420             425             430
Phe His Arg Phe His Trp Ser Arg Cys Ser Lys Leu Glu Leu Ser Arg
            435             440             445
Tyr Leu Pro Ser Tyr Asp Cys Leu Leu Asp Asp Pro Phe Asp Pro Ala
    450             455             460
Trp Pro Gln Pro Pro Glu Leu Pro Gly Ile Asn Tyr Ser Met Asp Glu
465             470             475             480
Gln Cys Arg Phe Asp Phe Gly Ser Gly Tyr Gln Thr Cys Leu Ala Phe
            485             490             495
Arg Thr Phe Glu Pro Cys Lys Gln Leu Trp Cys Ser His Pro Asp Asn
            500             505             510
Pro Tyr Phe Cys Lys Thr Lys Lys Gly Pro Pro Leu Asp Gly Thr Glu
            515             520             525
Cys Ala Pro Gly Lys Trp Cys Phe Lys Gly His Cys Ile Trp Lys Ser
            530             535             540
Pro Glu Gln Thr Tyr Gly Gln Asp Gly Gly Trp Ser Ser Trp Thr Lys
545             550             555             560
Phe Gly Ser Cys Ser Arg Ser Cys Gly Gly Gly Val Arg Ser Arg Ser
            565             570             575
Arg Ser Cys Asn Asn Pro Ser Pro Ala Tyr Gly Gly Arg Pro Cys Leu
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Gly Pro Met Phe Glu Tyr Gln Val Cys Asn Ser Glu Glu Cys Pro Gly
            595             600             605
Thr Tyr Glu Asp Phe Arg Ala Gln Gln Cys Ala Lys Arg Asn Ser Tyr
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Tyr Val His Gln Asn Ala Lys His Ser Trp Val Pro Tyr Glu Pro Asp
625             630             635             640
Asp Asp Ala Gln Lys Cys Glu Leu Ile Cys Gln Ser Ala Asp Thr Gly
            645             650             655
Asp Val Val Phe Met Asn Gln Val Val His Asp Gly Thr Arg Cys Ser
            660             665             670
Tyr Arg Asp Pro Tyr Ser Val Cys Ala Arg Gly Glu Cys Val Pro Val
            675             680             685
Gly Cys Asp Lys Glu Val Gly Ser Met Lys Ala Asp Asp Lys Cys Gly
    690             695             700
Val Cys Gly Gly Asp Asn Ser His Cys Arg Thr Val Lys Gly Thr Leu
705             710             715             720
Gly Lys Ala Ser Lys Gln Ala Gly Ala Leu Lys Leu Val Gln Ile Pro
            725             730             735
Ala Gly Ala Arg His Ile Gln Ile Glu Ala Leu Glu Lys Ser Pro His
            740             745             750
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78

Arg Ser Val Val Lys Asn Gln Val Thr Gly Ser Phe Ile Leu Asn Pro
      755   760   765

Lys Gly Lys Glu Ala Thr Ser Arg Thr Phe Thr Ala Met Gly Leu Glu
      770   775   780

Trp Glu Asp Ala Val Glu Asp Ala Lys Glu Ser Leu Lys Thr Ser Gly
785   790   795   800

Pro Leu Pro Glu Ala Ile Ala Ile Leu Ala Leu Pro Pro Thr Glu Gly
          805   810   815

Gly Pro Arg Ser Ser Leu Ala Tyr Lys Tyr Val Ile His Glu Asp Leu
      820   825   830

Leu Pro Leu Ile Gly Ser Asn Asn Val Leu Leu Glu Glu Met Asp Thr
      835   840   845

Tyr Glu Trp Ala Leu Lys Ser Trp Ala Pro Cys Ser Lys Ala Cys Gly
      850   855   860

Gly Gly Ile Gln Phe Thr Lys Tyr Gly Cys Arg Arg Arg Arg Asp His
865   870   875   880

His Met Val Gln Arg His Leu Cys Asp His Lys Lys Arg Pro Lys Pro
          885   890   895

Ile Arg Arg Arg Cys Asn Gln His Pro Cys Ser Gln Pro Val Trp Val
      900   905   910

Thr Glu Glu Trp Gly Ala Cys Ser Arg Ser Cys Gly Lys Leu Gly Val
      915   920   925

Gln Thr Arg Gly Ile Gln Cys Leu Leu Pro Leu Ser Asn Gly Thr His
      930   935   940

Lys Val Met Pro Ala Lys Ala Cys Ala Gly Asp Arg Pro Glu Ala Arg
945   950   955   960

Arg Pro Cys Leu Arg Val Pro Cys Pro Ala Gln Trp Arg Leu Gly Ala
          965   970   975

Trp Ser Gln Cys Ser Ala Thr Cys Gly Glu Gly Ile Gln Gln Arg Gln
          980   985   990

Val Val Cys Arg Thr Asn Ala Asn Ser Leu Gly His Cys Glu Gly Asp
      995   1000   1005

Arg Pro Asp Thr Val Gln Val Cys Ser Leu Pro Ala Cys Gly Gly Asn
     1010   1015   1020

His Gln Asn Ser Thr Val Arg Ala Asp Val Trp Glu Leu Gly Thr Pro
1025   1030   1035   1040

Glu Gly Gln Trp Val Pro Gln Ser Gly Pro Leu His Pro Ile Asn Lys
          1045   1050   1055

Ile Ser Ser Thr Glu Pro Cys Thr Gly Asp Arg Ser Val Phe Cys Gln
          1060   1065   1070

Met Glu Val Leu Asp Arg Tyr Cys Ser Ile Pro Gly Tyr His Arg Leu
          1075   1080   1085

Cys Cys Val Ser Cys Ile Lys Lys Ala Ser Gly Pro Asn Pro Gly Pro
          1090   1095   1100

Asp Pro Gly Pro Thr Ser Leu Pro Pro Phe Ser Thr Pro Gly Ser Pro
1105   1110   1115   1120

Leu Pro Gly Pro Gln Asp Pro Ala Asp Ala Ala Glu Pro Pro Gly Lys
          1125   1130   1135

Pro Thr Gly Ser Glu Asp His Gln His Gly Arg Ala Thr Gln Leu Pro
          1140   1145   1150

Gly Ala Leu Asp Thr Ser Ser Pro Gly Thr Gln His Pro Phe Ala Pro
          1155   1160   1165

Glu Thr Pro Ile Pro Gly Ala Ser Trp Ser Ile Ser Pro Thr Thr Pro
      1170   1175   1180

Gly Gly Leu Pro Trp Gly Trp Thr Gln Thr Pro Thr Pro Val Pro Glu
1185   1190   1195   1200

Asp Lys Gly Gln Pro Gly Glu Asp Leu Arg His Pro Gly Thr Ser Leu
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Pro Ala Asp Leu Pro Gly Arg Pro Pro Glu Pro Cys His Pro Thr Gly
              1220   1225   1230
Thr Phe Thr Leu Cys Val Leu Pro Arg Asp Ser Gln Leu Arg Gly His
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80

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1               5                   10                  15


ctg gcc gag atg ggg agc cca gac gcc gcg gcg gcc gtg cgc aag gac    96
Leu Ala Glu Met Gly Ser Pro Asp Ala Ala Ala Ala Val Arg Lys Asp
            20                  25                  30


agg ctg cac ccg agg caa gtg aaa tta tta gag acc ctg agc gaa tac   144
Arg Leu His Pro Arg Gln Val Lys Leu Leu Glu Thr Leu Ser Glu Tyr
        35                  40                  45


gaa atc gtg tct ccc atc cga gtg aac gct ctc gga gaa ccc ttt ccc   192
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81

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Glu Ile Val Ser Pro Ile Arg Val Asn Ala Leu Gly Glu Pro Phe Pro
     50              55              60

acg aac gtc cac ttc aaa aga acg cga cgg agc att aac tct gcc act   240
Thr Asn Val His Phe Lys Arg Thr Arg Arg Ser Ile Asn Ser Ala Thr
 65              70              75              80

gac ccc tgg cct gcc ttc gcc tcc tcc tct tcc tcc tct acc tcc wcc   288
Asp Pro Trp Pro Ala Phe Ala Ser Ser Ser Ser Ser Ser Thr Ser Xaa
             85              90              95

cag gcg cat tac cgc ctc tct gcc ttc ggc cag cag ttt cta ttt aat   336
Gln Ala His Tyr Arg Leu Ser Ala Phe Gly Gln Gln Phe Leu Phe Asn
             100             105             110

ctc acc gcc aat gcc gga ttt atc gct cca ctg ttc·act gtc acc ctc   384
Leu Thr Ala Asn Ala Gly Phe Ile Ala Pro Leu Phe Thr Val Thr Leu
             115             120             125

ctc ggg acg ccc ggg gtg aat cag acc aag ttt tat tcc gaa gag gaa   432
Leu Gly Thr Pro Gly Val Asn Gln Thr Lys Phe Tyr Ser Glu Glu Glu
     130             135             140

gcg gaa ctc aag cac tgt ttc tac aaa ggc tat gtc aat acc aac tcc   480
Ala Glu Leu Lys His Cys Phe Tyr Lys Gly Tyr Val Asn Thr Asn Ser
145             150             155             160

gag cac acg gcc gtc atc agc ctc tgc tca gga atg ctg ggc aca ttc   528
Glu His Thr Ala Val Ile Ser Leu Cys Ser Gly Met Leu Gly Thr Phe
             165             170             175

cgg tct cat gat ggg gat tat ttt att gaa cca cta cag tct atg gat   576
Arg Ser His Asp Gly Asp Tyr Phe Ile Glu Pro Leu Gln Ser Met Asp
             180             185             190

gaa caa gaa gat gaa gag gaa caa aac aaa ccc cac atc att tat agg   624
Glu Gln Glu Asp Glu Glu Glu Gln Asn Lys Pro His Ile Ile Tyr Arg
         195             200             205

cgc agc gcc ccc cag aga gag ccc tca aca gga agg cat gca tgt gac   672
Arg Ser Ala Pro Gln Arg Glu Pro Ser Thr Gly Arg His Ala Cys Asp
     210             215             220

acc tca gaa cac aaa aat agg cac agt aaa gac aag aag aaa acc aga   720
Thr Ser Glu His Lys Asn Arg His Ser Lys Asp Lys Lys Lys Thr Arg
225             230             235             240

gca aga aaa tgg gga gaa agg att aac ctg gct ggt gac gta gca gca   768
Ala Arg Lys Trp Gly Glu Arg Ile Asn Leu Ala Gly Asp Val Ala Ala
             245             250             255

tta aac agc ggc tta gca aca gag gca ttt tct gct tat ggt aat aag   816
Leu Asn Ser Gly Leu Ala Thr Glu Ala Phe Ser Ala Tyr Gly Asn Lys
             260             265             270

acg gac aac aca aga gaa aag agg acc cac aga agg aca aaa cgt ttt   864
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82

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          Thr Asp Asn Thr Arg Glu Lys Arg Thr His Arg Arg Thr Lys Arg Phe
                  275                 280                 285

          tta tcc tat cca cgg ttt gta gaa gtc ttg gtg gtg gca gac aac aga    912
          Leu Ser Tyr Pro Arg Phe Val Glu Val Leu Val Val Ala Asp Asn Arg
                  290                 295                 300

          atg gtt tca tac cat gga gaa aac ctt caa cac tat att tta act tta    960
          Met Val Ser Tyr His Gly Glu Asn Leu Gln His Tyr Ile Leu Thr Leu
          305                 310                 315                 320

          atg tca att gat ggg cct tcc ata tct ttt aat gct cag aca aca tta   1008
          Met Ser Ile Asp Gly Pro Ser Ile Ser Phe Asn Ala Gln Thr Thr Leu
                          325                 330                 335

          aaa aac ttt tgc cag tgg cag cat tcg aag aac agt cca ggt gga atc   1056
          Lys Asn Phe Cys Gln Trp Gln His Ser Lys Asn Ser Pro Gly Gly Ile
                          340                 345                 350

          cat cat gat act gct gtt ctc tta aca aga cag gat atc tgc aga gct   1104
          His His Asp Thr Ala Val Leu Leu Thr Arg Gln Asp Ile Cys Arg Ala
                          355                 360                 365

          cac gac aaa tgt gat acc tta ggc ctg gct gaa ctg gga acc att tgt   1152
          His Asp Lys Cys Asp Thr Leu Gly Leu Ala Glu Leu Gly Thr Ile Cys
                  370                 375                 380

          gat ccc tat aga agc tgt tct att agt gaa gat agt gga ttg agt aca   1200
          Asp Pro Tyr Arg Ser Cys Ser Ile Ser Glu Asp Ser Gly Leu Ser Thr
          385                 390                 395                 400

          gct ttt acg atc gcc cat gag ctg ggc cat gtg ttt aac atg cct cat   1248
          Ala Phe Thr Ile Ala His Glu Leu Gly His Val Phe Asn Met Pro His
                          405                 410                 415

          gat gac aac aac aaa tgt aaa gaa gaa gga gtt aag agt ccc cag cat   1296
          Asp Asp Asn Asn Lys Cys Lys Glu Glu Gly Val Lys Ser Pro Gln His
                          420                 425                 430

          gtc atg gct cca aca ctg aac ttc tac acc aac ccc tgg atg tgg tca   1344
          Val Met Ala Pro Thr Leu Asn Phe Tyr Thr Asn Pro Trp Met Trp Ser
                  435                 440                 445

          aag tgt agt cga aaa tat atc act gag ttt tta gac act ggt tat ggc   1392
          Lys Cys Ser Arg Lys Tyr Ile Thr Glu Phe Leu Asp Thr Gly Tyr Gly
                  450                 455                 460

          gag tgt ttg ctt aac gaa cct gaa tcc aga ccc tac cct ttg cct gtc   1440
          Glu Cys Leu Leu Asn Glu Pro Glu Ser Arg Pro Tyr Pro Leu Pro Val
          465                 470                 475                 480

          caa ctg cca ggc atc ctt tac aac gtg aat aaa caa tgt gaa ttg att   1488
          Gln Leu Pro Gly Ile Leu Tyr Asn Val Asn Lys Gln Cys Glu Leu Ile
                          485                 490                 495

          ttt gga cca ggt tct cag gtg tgc cca tat atg atg cag tgc aga cgg   1536
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83

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    Phe Gly Pro Gly Ser Gln Val Cys Pro Tyr Met Met Gln Cys Arg Arg
            500                 505                 510

    ctc tgg tgc aat aac gtc aat gga gta cac aaa ggc tgc cgg act cag   1584
    Leu Trp Cys Asn Asn Val Asn Gly Val His Lys Gly Cys Arg Thr Gln
            515                 520                 525

    cac aca ccc tgg gcc gat ggg acg gag tgc gag cct gga aag cac tgc   1632
    His Thr Pro Trp Ala Asp Gly Thr Glu Cys Glu Pro Gly Lys His Cys
            530                 535                 540

    aag tat gga ttt tgt gtt ccc aaa gaa atg gat gtc ccc gtg aca gat   1680
    Lys Tyr Gly Phe Cys Val Pro Lys Glu Met Asp Val Pro Val Thr Asp
    545                 550                 555                 560

    gga tcc tgg gga agt tgg agt ccc ttt gga acc tgc tcc aga aca tgt   1728
    Gly Ser Trp Gly Ser Trp Ser Pro Phe Gly Thr Cys Ser Arg Thr Cys
                    565                 570                 575

    gga ggg ggc atc aaa aca gcc att cga gag tgc aac aga cca gaa cca   1776
    Gly Gly Gly Ile Lys Thr Ala Ile Arg Glu Cys Asn Arg Pro Glu Pro
                    580                 585                 590

    aaa aat ggt gga aaa tac tgt gta gga cgt aga atg aaa ttt aag tcc   1824
    Lys Asn Gly Gly Lys Tyr Cys Val Gly Arg Arg Met Lys Phe Lys Ser
            595                 600                 605

    tgc aac acg gag cca tgt ctc aag cag aag cga gac ttc cga gat gaa   1872
    Cys Asn Thr Glu Pro Cys Leu Lys Gln Lys Arg Asp Phe Arg Asp Glu
            610                 615                 620

    cag tgt gct cac ttt gac ggg aag cat ttt aac atc aac ggt ctg ctt   1920
    Gln Cys Ala His Phe Asp Gly Lys His Phe Asn Ile Asn Gly Leu Leu
    625                 630                 635                 640

    ccc aat gtg cgc tgg gtc cct aaa tac agt gga att ctg atg aag gac   1968
    Pro Asn Val Arg Trp Val Pro Lys Tyr Ser Gly Ile Leu Met Lys Asp
                    645                 650                 655

    cgg tgc aag ttg ttc tgc aga gtg gca ggg aac aca gcc tac tat cag   2016
    Arg Cys Lys Leu Phe Cys Arg Val Ala Gly Asn Thr Ala Tyr Tyr Gln
                    660                 665                 670

    ctt cga gac aga gtg ata gat gga act cct tgt ggc cag gac aca aat   2064
    Leu Arg Asp Arg Val Ile Asp Gly Thr Pro Cys Gly Gln Asp Thr Asn
            675                 680                 685

    gat atc tgt gtc cag ggc ctt tgc cgg caa gct gga tgc gat cat gtt   2112
    Asp Ile Cys Val Gln Gly Leu Cys Arg Gln Ala Gly Cys Asp His Val
            690                 695                 700

    tta aac tca aaa gcc cgg aga gat aaa tgt ggg gtt tgt ggt ggc gat   2160
    Leu Asn Ser Lys Ala Arg Arg Asp Lys Cys Gly Val Cys Gly Gly Asp
    705                 710                 715                 720

    aat tct tca tgc aaa aca gtg gca gga aca ttt aat aca gta cat tat   2208
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84

```
Asn Ser Ser Cys Lys Thr Val Ala Gly Thr Phe Asn Thr Val His Tyr
                  725               730               735

ggt tac aat act gtg gtc cga att cca gct ggt gct acc aat att gat    2256
Gly Tyr Asn Thr Val Val Arg Ile Pro Ala Gly Ala Thr Asn Ile Asp
              740               745               750

gtg cgg cag cac agt ttc tca ggg gaa aca gac gat gac aac tac tta    2304
Val Arg Gln His Ser Phe Ser Gly Glu Thr Asp Asp Asp Asn Tyr Leu
              755               760               765

gct tta tca agc agt aaa ggt gaa ttc ttg cta aat gga aac ttt gtt    2352
Ala Leu Ser Ser Ser Lys Gly Glu Phe Leu Leu Asn Gly Asn Phe Val
              770               775               780

gtc aca atg gcc aaa agg gaa att cgc att ggg aat gct gtg gta gag    2400
Val Thr Met Ala Lys Arg Glu Ile Arg Ile Gly Asn Ala Val Val Glu
785               790               795               800

tac agt ggg tcc gag act gcc gta gaa aga att aac tca aca gat cgc    2448
Tyr Ser Gly Ser Glu Thr Ala Val Glu Arg Ile Asn Ser Thr Asp Arg
                  805               810               815

att gag caa gaa ctt ttg ctt cag gtt ttg tcg gtg gga aag ttg tac    2496
Ile Glu Gln Glu Leu Leu Leu Gln Val Leu Ser Val Gly Lys Leu Tyr
              820               825               830

aac ccc gat gta cgc tat tct ttc aat att cca att gaa gat aaa cct    2544
Asn Pro Asp Val Arg Tyr Ser Phe Asn Ile Pro Ile Glu Asp Lys Pro
              835               840               845

cag cag ttt tac tgg aac agt cat ggg cca tgg caa gca tgc agt aaa    2592
Gln Gln Phe Tyr Trp Asn Ser His Gly Pro Trp Gln Ala Cys Ser Lys
              850               855               860

ccc tgc caa ggg gaa cgg aaa cga aaa ctt gtt tgc acc agg gaa tct    2640
Pro Cys Gln Gly Glu Arg Lys Arg Lys Leu Val Cys Thr Arg Glu Ser
865                   870               875               880

gat cag ctt act gtt tct gat caa aga tgc gat cgg ctg ccc cag cct    2688
Asp Gln Leu Thr Val Ser Asp Gln Arg Cys Asp Arg Leu Pro Gln Pro
              885               890               895

gga cac att act gaa ccc tgt ggt aca gac tgt gac ctg agg tgg cat    2736
Gly His Ile Thr Glu Pro Cys Gly Thr Asp Cys Asp Leu Arg Trp His
              900               905               910

gtt gcc agc agg agt gaa tgt agt gcc cag tgt ggc ttg ggt tac cgc    2784
Val Ala Ser Arg Ser Glu Cys Ser Ala Gln Cys Gly Leu Gly Tyr Arg
              915               920               925

aca ttg gac atc tac tgt gcc aaa tat agc agg ctg gat ggg aag act    2832
Thr Leu Asp Ile Tyr Cys Ala Lys Tyr Ser Arg Leu Asp Gly Lys Thr
              930               935               940

gag aag gtt gat gat ggt ttt tgc agc agc cat ccc aaa cca agc aac    2880
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85

```
Glu Lys Val Asp Asp Gly Phe Cys Ser Ser His Pro Lys Pro Ser Asn
945             950             955             960

cgt gaa aaa tgc tca ggg gaa tgt aac acg ggt ggc tgg cgc tat tct   2928
Arg Glu Lys Cys Ser Gly Glu Cys Asn Thr Gly Gly Trp Arg Tyr Ser
                965             970             975

gcc tgg act gaa tgt tca aaa agc tgt gac ggt ggg acc cag agg aga   2976
Ala Trp Thr Glu Cys Ser Lys Ser Cys Asp Gly Gly Thr Gln Arg Arg
            980             985             990

agg gct att tgt gtc aat acc cga aat gat gta ctg gat gac agc aaa   3024
Arg Ala Ile Cys Val Asn Thr Arg Asn Asp Val Leu Asp Asp Ser Lys
            995             1000            1005

tgc aca cat caa gag aaa gtt acc att cag agg tgc agt gag ttc cct   3072
Cys Thr His Gln Glu Lys Val Thr Ile Gln Arg Cys Ser Glu Phe Pro
    1010            1015            1020

tgt cca cag tgg aaa tct gga gac tgg tca gag tgc ttg gtc acc tgt   3120
Cys Pro Gln Trp Lys Ser Gly Asp Trp Ser Glu Cys Leu Val Thr Cys
1025            1030            1035            1040

gga aaa ggg cat aag cac cgc cag gtc tgg tgt cag ttt ggt gaa gat   3168
Gly Lys Gly His Lys His Arg Gln Val Trp Cys Gln Phe Gly Glu Asp
            1045            1050            1055

cga tta aat gat aga atg tgt gac cct gag acc aag cca aca tct atg   3216
Arg Leu Asn Asp Arg Met Cys Asp Pro Glu Thr Lys Pro Thr Ser Met
            1060            1065            1070

cag act tgt cag cag ccg gaa tgt gca tcc tgg cag gcg ggt ccc tgg   3264
Gln Thr Cys Gln Gln Pro Glu Cys Ala Ser Trp Gln Ala Gly Pro Trp
            1075            1080            1085

gga cag tgc agt gtc act tgt gga cag gga tac cag cta aga gca gtg   3312
Gly Gln Cys Ser Val Thr Cys Gly Gln Gly Tyr Gln Leu Arg Ala Val
    1090            1095            1100

aaa tgc atc att ggg act tat atg tca gtg gta gat gac aat gac tgt   3360
Lys Cys Ile Ile Gly Thr Tyr Met Ser Val Val Asp Asp Asn Asp Cys
1105            1110            1115            1120

aat gca gca act aga cca act gat acc cag gac tgt gaa tta cca tca   3408
Asn Ala Ala Thr Arg Pro Thr Asp Thr Gln Asp Cys Glu Leu Pro Ser
            1125            1130            1135

tgt cat cct ccc cca gct gcc ccg gaa acg agg aga agc aca tac agt   3456
Cys His Pro Pro Pro Ala Ala Pro Glu Thr Arg Arg Ser Thr Tyr Ser
            1140            1145            1150

gca cca aga acc cag tgg cga ttt ggg tct tgg acc cca tgc tca gcc   3504
Ala Pro Arg Thr Gln Trp Arg Phe Gly Ser Trp Thr Pro Cys Ser Ala
            1155            1160            1165

act tgt ggg aaa ggt acc cgg atg aga tac gtc agc tgc cga gat gag   3552
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86

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    Thr Cys Gly Lys Gly Thr Arg Met Arg Tyr Val Ser Cys Arg Asp Glu
         1170                1175                1180

aat ggc tct gtg gct gac gag agt gcc tgt gct acc ctg cct aga cca   3600
Asn Gly Ser Val Ala Asp Glu Ser Ala Cys Ala Thr Leu Pro Arg Pro
1185                1190                1195                1200

gtg gca aag gaa gaa tgt tct gtg aca ccc tgt ggg caa tgg aag gcc   3648
Val Ala Lys Glu Glu Cys Ser Val Thr Pro Cys Gly Gln Trp Lys Ala
                   1205                1210                1215

ttg gac tgg agc tct tgc tct gtg acc tgt ggg caa ggt agg gca acc   3696
Leu Asp Trp Ser Ser Cys Ser Val Thr Cys Gly Gln Gly Arg Ala Thr
                   1220                1225                1230

cgg caa gtg atg tgt gtc aac tac agt gac cac gtg aty gat cgg agt   3744
Arg Gln Val Met Cys Val Asn Tyr Ser Asp His Val Xaa Asp Arg Ser
              1235                1240                1245

gag tgt gac cag gat tat atc cca gaa act gac cag gac tgt tcc atg   3792
Glu Cys Asp Gln Asp Tyr Ile Pro Glu Thr Asp Gln Asp Cys Ser Met
         1250                1255                1260

tca cca tgc cct caa agg acc cca gac agt ggc tta gct cag cac ccc   3840
Ser Pro Cys Pro Gln Arg Thr Pro Asp Ser Gly Leu Ala Gln His Pro
1265                1270                1275                1280

ttc caa aat gag gac tat cgt ccc cgg agc gcc agc ccc agc cgc acc   3888
Phe Gln Asn Glu Asp Tyr Arg Pro Arg Ser Ala Ser Pro Ser Arg Thr
                   1285                1290                1295

cat gtg ctc ggt gga aac cag tgg aga act ggc ccc tgg gga gca tgt   3936
His Val Leu Gly Gly Asn Gln Trp Arg Thr Gly Pro Trp Gly Ala Cys
                   1300                1305                1310

tcc agt acc tgt gct ggc gga tcc cag cgg cgt gtt gtt gta tgt cag   3984
Ser Ser Thr Cys Ala Gly Gly Ser Gln Arg Arg Val Val Val Cys Gln
              1315                1320                1325

gat gaa aat gga tac acc gca aac gac tgt gtg gag aga ata aaa cct   4032
Asp Glu Asn Gly Tyr Thr Ala Asn Asp Cys Val Glu Arg Ile Lys Pro
         1330                1335                1340

gat gag caa aga gcc tgt gaa tcc ggc cct tgt cct cag tgg gct tat   4080
Asp Glu Gln Arg Ala Cys Glu Ser Gly Pro Cys Pro Gln Trp Ala Tyr
1345                1350                1355                1360

ggc aac tgg gga gag tgc act aag ctg tgt ggt gga ggc ata aga aca   4128
Gly Asn Trp Gly Glu Cys Thr Lys Leu Cys Gly Gly Gly Ile Arg Thr
                   1365                1370                1375

aga ctg gtg gtc tgt cag cgg tcc aac ggt gaa cgg ttt cca gat ttg   4176
Arg Leu Val Val Cys Gln Arg Ser Asn Gly Glu Arg Phe Pro Asp Leu
              1380                1385                1390

agc tgt gaa att ctt gat aaa cct ccc gat cgt gag cag tgt aac aca   4224
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87

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        Ser Cys Glu Ile Leu Asp Lys Pro Pro Asp Arg Glu Gln Cys Asn Thr
            1395                    1400                1405

        cat gct tgt cca cac gac gct gca tgg agt act ggc cct tgg agc tcg    4272
        His Ala Cys Pro His Asp Ala Ala Trp Ser Thr Gly Pro Trp Ser Ser
            1410                    1415                1420

        tgt tct gtc tct tgt ggt cga ggg cat aaa caa cga aat gtt tac tgc    4320
        Cys Ser Val Ser Cys Gly Arg Gly His Lys Gln Arg Asn Val Tyr Cys
        1425                    1430                1435                1440

        atg gca aaa gat gga agc cat tta gaa agt gat tac tgt aag cac ctg    4368
        Met Ala Lys Asp Gly Ser His Leu Glu Ser Asp Tyr Cys Lys His Leu
                            1445                1450                1455

        gct aag cca cat ggg cac aga aag tgc cga gga gga aga tgc ccc aaa    4416
        Ala Lys Pro His Gly His Arg Lys Cys Arg Gly Gly Arg Cys Pro Lys
                        1460                1465                1470

        tgg aaa gct ggc gct tgg agt cag tgc tct gtg tcc tgt ggc cga ggc    4464
        Trp Lys Ala Gly Ala Trp Ser Gln Cys Ser Val Ser Cys Gly Arg Gly
                    1475                1480                1485

        gta cag cag agg cat gtg ggc tgt cag atc gga aca cac aaa ata gcc    4512
        Val Gln Gln Arg His Val Gly Cys Gln Ile Gly Thr His Lys Ile Ala
            1490                    1495                1500

        aga gag acc gag tgc aac cca tac acc aga ccg gag tcg gaa cgc gac    4560
        Arg Glu Thr Glu Cys Asn Pro Tyr Thr Arg Pro Glu Ser Glu Arg Asp
        1505                    1510                1515                1520

        tgc caa ggc cca cgg tgt ccc ctc tac act tgg agg gca gag gaa tgg    4608
        Cys Gln Gly Pro Arg Cys Pro Leu Tyr Thr Trp Arg Ala Glu Glu Trp
                        1525                1530                1535

        caa gaa tgc acc aag acc tgc ggc gaa ggc tcc agg tac cgc aag gtg    4656
        Gln Glu Cys Thr Lys Thr Cys Gly Glu Gly Ser Arg Tyr Arg Lys Val
                    1540                1545                1550

        gtg tgt gtg gat gac aac aaa aac gag gtg cat ggg gca cgc tgt gac    4704
        Val Cys Val Asp Asp Asn Lys Asn Glu Val His Gly Ala Arg Cys Asp
                    1555                1560                1565

        gtg agc aag cgg ccg gtg gac cgt gaa agc tgt agt ttg caa ccc tgc    4752
        Val Ser Lys Arg Pro Val Asp Arg Glu Ser Cys Ser Leu Gln Pro Cys
            1570                    1575                1580

        gag tat gtc tgg atc aca gga gaa tgg tca gag tgc tca gtg acc tgt    4800
        Glu Tyr Val Trp Ile Thr Gly Glu Trp Ser Glu Cys Ser Val Thr Cys
        1585                    1590                1595                1600

        gga aaa ggc tac aaa caa agg ctt gtc tcg tgc agc gag att tac acc    4848
        Gly Lys Gly Tyr Lys Gln Arg Leu Val Ser Cys Ser Glu Ile Tyr Thr
                        1605                1610                1615

        ggg aag gag aat tat gaa tac agc tac caa acc acc atc aac tgc cca    4896
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88

```
          Gly Lys Glu Asn Tyr Glu Tyr Ser Tyr Gln Thr Thr Ile Asn Cys Pro
              1620                    1625                1630

          ggc acg cag ccc ccc agt gtt cac ccc tgt tac ctg agg gac tgc cct    4944
          Gly Thr Gln Pro Pro Ser Val His Pro Cys Tyr Leu Arg Asp Cys Pro
                  1635                    1640                1645

          gtc tcg gcc acc tgg aga gtt ggc aac tgg ggg agc tgc tca gtg tct    4992
          Val Ser Ala Thr Trp Arg Val Gly Asn Trp Gly Ser Cys Ser Val Ser
              1650                    1655                1660

          tgt ggt gtt gga gtg atg cag aga tct gtg caa tgt tta acc aat gag    5040
          Cys Gly Val Gly Val Met Gln Arg Ser Val Gln Cys Leu Thr Asn Glu
          1665                    1670                1675                1680

          gac caa ccc agc cac tta tgc cac act gat ctg aag cca gaa gaa cga    5088
          Asp Gln Pro Ser His Leu Cys His Thr Asp Leu Lys Pro Glu Glu Arg
                      1685                    1690                1695

          aaa acc tgc cgt aat gtc tat aac tgt gag tta ccc cag aat tgc aag    5136
          Lys Thr Cys Arg Asn Val Tyr Asn Cys Glu Leu Pro Gln Asn Cys Lys
                          1700                1705                1710

          gag gta aaa aga ctt aaa ggt gcc agt gaa gat ggt gaa tat ttc ctg    5184
          Glu Val Lys Arg Leu Lys Gly Ala Ser Glu Asp Gly Glu Tyr Phe Leu
                  1715                    1720                1725

          atg att aga gga aag ctt ctg aag ata ttc tgt gcg ggg atg cac tct    5232
          Met Ile Arg Gly Lys Leu Leu Lys Ile Phe Cys Ala Gly Met His Ser
                  1730                    1735                1740

          gac cac ccc aaa gag tac gtg aca ctg gtg cat gga gac tct gag aat    5280
          Asp His Pro Lys Glu Tyr Val Thr Leu Val His Gly Asp Ser Glu Asn
          1745                    1750                1755                1760

          ttc tcc gag gtt tat ggg cac agg tta cac aac cca aca gaa tgt ccc    5328
          Phe Ser Glu Val Tyr Gly His Arg Leu His Asn Pro Thr Glu Cys Pro
                          1765                1770                1775

          tat aac ggg agc cgg cgc gat gac tgc caa tgt cgg aag gat tac acg    5376
          Tyr Asn Gly Ser Arg Arg Asp Asp Cys Gln Cys Arg Lys Asp Tyr Thr
                      1780                    1785                1790

          gcc gct ggg ttt tcc agt ttt cag aaa atc aga ata gac ctg acc agc    5424
          Ala Ala Gly Phe Ser Ser Phe Gln Lys Ile Arg Ile Asp Leu Thr Ser
                  1795                    1800                1805

          atg cag ata atc acc act gac tta cag ttt gca agg aca agc gaa gga    5472
          Met Gln Ile Ile Thr Thr Asp Leu Gln Phe Ala Arg Thr Ser Glu Gly
              1810                    1815                1820

          cat ccc gtc cct ttt gcc aca gcc ggg gat tgc tac agc gct gcc aag    5520
          His Pro Val Pro Phe Ala Thr Ala Gly Asp Cys Tyr Ser Ala Ala Lys
          1825                    1830                1835                1840

          tgc cca cag ggt cgt ttt agc atc aac ctt tat gga acc ggc ttg tct    5568
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89

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Cys Pro Gln Gly Arg Phe Ser Ile Asn Leu Tyr Gly Thr Gly Leu Ser
            1845                1850                1855

tta act gaa tct gcc aga tgg ata tca caa ggg aat tat gct gtc tct    5616
Leu Thr Glu Ser Ala Arg Trp Ile Ser Gln Gly Asn Tyr Ala Val Ser
            1860                1865                1870

gac atc aag aag tcg ccg gat ggt acc cga gtc gta ggg aaa tgc ggt    5664
Asp Ile Lys Lys Ser Pro Asp Gly Thr Arg Val Val Gly Lys Cys Gly
            1875                1880                1885

ggt tac tgt gga aaa tgc act cca tcc tct ggt act ggc ctg gag gtg    5712
Gly Tyr Cys Gly Lys Cys Thr Pro Ser Ser Gly Thr Gly Leu Glu Val
            1890                1895                1900

cga gtt tta tag                                                     5724
Arg Val Leu  *
1905
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<210> 25
<211> 1907
<212> PRT
<213> homo sapiens

<400> 25
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Met Gln Phe Val Ser Trp Ala Thr Leu Leu Thr Leu Leu Val Arg Asp
1               5                   10                  15
Leu Ala Glu Met Gly Ser Pro Asp Ala Ala Ala Ala Val Arg Lys Asp
            20                  25                  30
Arg Leu His Pro Arg Gln Val Lys Leu Leu Glu Thr Leu Ser Glu Tyr
            35                  40                  45
Glu Ile Val Ser Pro Ile Arg Val Asn Ala Leu Gly Glu Pro Phe Pro
        50                  55                  60
Thr Asn Val His Phe Lys Arg Thr Arg Arg Ser Ile Asn Ser Ala Thr
65                  70                  75                  80
Asp Pro Trp Pro Ala Phe Ala Ser Ser Ser Ser Ser Ser Thr Ser Ser
                85                  90                  95
Gln Ala His Tyr Arg Leu Ser Ala Phe Gly Gln Gln Phe Leu Phe Asn
            100                 105                 110
Leu Thr Ala Asn Ala Gly Phe Ile Ala Pro Leu Phe Thr Val Thr Leu
            115                 120                 125
Leu Gly Thr Pro Gly Val Asn Gln Thr Lys Phe Tyr Ser Glu Glu Glu
        130                 135                 140
Ala Glu Leu Lys His Cys Phe Tyr Lys Gly Tyr Val Asn Thr Asn Ser
145                 150                 155                 160
Glu His Thr Ala Val Ile Ser Leu Cys Ser Gly Met Leu Gly Thr Phe
                165                 170                 175
Arg Ser His Asp Gly Asp Tyr Phe Ile Glu Pro Leu Gln Ser Met Asp
            180                 185                 190
Glu Gln Glu Asp Glu Glu Glu Gln Asn Lys Pro His Ile Ile Tyr Arg
            195                 200                 205
Arg Ser Ala Pro Gln Arg Glu Pro Ser Thr Gly Arg His Ala Cys Asp
        210                 215                 220
Thr Ser Glu His Lys Asn Arg His Ser Lys Asp Lys Lys Lys Thr Arg
225                 230                 235                 240
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90

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Ala Arg Lys Trp Gly Glu Arg Ile Asn Leu Ala Gly Asp Val Ala Ala
            245              250              255
Leu Asn Ser Gly Leu Ala Thr Glu Ala Phe Ser Ala Tyr Gly Asn Lys
            260              265              270
Thr Asp Asn Thr Arg Glu Lys Arg Thr His Arg Arg Thr Lys Arg Phe
            275              280              285
Leu Ser Tyr Pro Arg Phe Val Glu Val Leu Val Val Ala Asp Asn Arg
        290          295              300
Met Val Ser Tyr His Gly Glu Asn Leu Gln His Tyr Ile Leu Thr Leu
305              310              315              320
Met Ser Ile Asp Gly Pro Ser Ile Ser Phe Asn Ala Gln Thr Thr Leu
            325              330              335
Lys Asn Phe Cys Gln Trp Gln His Ser Lys Asn Ser Pro Gly Gly Ile
            340              345              350
His His Asp Thr Ala Val Leu Leu Thr Arg Gln Asp Ile Cys Arg Ala
        355              360              365
His Asp Lys Cys Asp Thr Leu Gly Leu Ala Glu Leu Gly Thr Ile Cys
    370              375              380
Asp Pro Tyr Arg Ser Cys Ser Ile Ser Glu Asp Ser Gly Leu Ser Thr
385              390              395              400
Ala Phe Thr Ile Ala His Glu Leu Gly His Val Phe Asn Met Pro His
            405              410              415
Asp Asp Asn Asn Lys Cys Lys Glu Glu Gly Val Lys Ser Pro Gln His
            420              425              430
Val Met Ala Pro Thr Leu Asn Phe Tyr Thr Asn Pro Trp Met Trp Ser
        435              440              445
Lys Cys Ser Arg Lys Tyr Ile Thr Glu Phe Leu Asp Thr Gly Tyr Gly
    450              455              460
Glu Cys Leu Leu Asn Glu Pro Glu Ser Arg Pro Tyr Pro Leu Pro Val
465              470              475              480
Gln Leu Pro Gly Ile Leu Tyr Asn Val Asn Lys Gln Cys Glu Leu Ile
            485              490              495
Phe Gly Pro Gly Ser Gln Val Cys Pro Tyr Met Met Gln Cys Arg Arg
            500              505              510
Leu Trp Cys Asn Asn Val Asn Gly Val His Lys Gly Cys Arg Thr Gln
        515              520              525
His Thr Pro Trp Ala Asp Gly Thr Glu Cys Glu Pro Gly Lys His Cys
    530              535              540
Lys Tyr Gly Phe Cys Val Pro Lys Glu Met Asp Val Pro Val Thr Asp
545              550              555              560
Gly Ser Trp Gly Ser Trp Ser Pro Phe Gly Thr Cys Ser Arg Thr Cys
            565              570              575
Gly Gly Gly Ile Lys Thr Ala Ile Arg Glu Cys Asn Arg Pro Glu Pro
        580              585              590
Lys Asn Gly Gly Lys Tyr Cys Val Gly Arg Arg Met Lys Phe Lys Ser
        595              600              605
Cys Asn Thr Glu Pro Cys Leu Lys Gln Lys Arg Asp Phe Arg Asp Glu
    610              615              620
Gln Cys Ala His Phe Asp Gly Lys His Phe Asn Ile Asn Gly Leu Leu
625              630              635              640
Pro Asn Val Arg Trp Val Pro Lys Tyr Ser Gly Ile Leu Met Lys Asp
            645              650              655
Arg Cys Lys Leu Phe Cys Arg Val Ala Gly Asn Thr Ala Tyr Tyr Gln
            660              665              670
Leu Arg Asp Arg Val Ile Asp Gly Thr Pro Cys Gly Gln Asp Thr Asn
        675              680              685
```

Asp Ile Cys Val Gln Gly Leu Cys Arg Gln Ala Gly Cys Asp His Val
  690   695   700

Leu Asn Ser Lys Ala Arg Arg Asp Lys Cys Gly Val Cys Gly Gly Asp
705   710   715   720

Asn Ser Ser Cys Lys Thr Val Ala Gly Thr Phe Asn Thr Val His Tyr
         725   730   735

Gly Tyr Asn Thr Val Val Arg Ile Pro Ala Gly Ala Thr Asn Ile Asp
        740   745   750

Val Arg Gln His Ser Phe Ser Gly Glu Thr Asp Asp Asp Asn Tyr Leu
    755   760   765

Ala Leu Ser Ser Ser Lys Gly Glu Phe Leu Leu Asn Gly Asn Phe Val
  770   775   780

Val Thr Met Ala Lys Arg Glu Ile Arg Ile Gly Asn Ala Val Val Glu
785   790   795   800

Tyr Ser Gly Ser Glu Thr Ala Val Glu Arg Ile Asn Ser Thr Asp Arg
      805   810   815

Ile Glu Gln Glu Leu Leu Leu Gln Val Leu Ser Val Gly Lys Leu Tyr
    820   825   830

Asn Pro Asp Val Arg Tyr Ser Phe Asn Ile Pro Ile Glu Asp Lys Pro
    835   840   845

Gln Gln Phe Tyr Trp Asn Ser His Gly Pro Trp Gln Ala Cys Ser Lys
  850   855   860

Pro Cys Gln Gly Glu Arg Lys Arg Lys Leu Val Cys Thr Arg Glu Ser
865   870   875   880

Asp Gln Leu Thr Val Ser Asp Gln Arg Cys Asp Arg Leu Pro Gln Pro
        885   890   895

Gly His Ile Thr Glu Pro Cys Gly Thr Asp Cys Asp Leu Arg Trp His
      900   905   910

Val Ala Ser Arg Ser Glu Cys Ser Ala Gln Cys Gly Leu Gly Tyr Arg
      915   920   925

Thr Leu Asp Ile Tyr Cys Ala Lys Tyr Ser Arg Leu Asp Gly Lys Thr
    930   935   940

Glu Lys Val Asp Asp Gly Phe Cys Ser Ser His Pro Lys Pro Ser Asn
945   950   955   960

Arg Glu Lys Cys Ser Gly Glu Cys Asn Thr Gly Gly Trp Arg Tyr Ser
      965   970   975

Ala Trp Thr Glu Cys Ser Lys Ser Cys Asp Gly Gly Thr Gln Arg Arg
      980   985   990

Arg Ala Ile Cys Val Asn Thr Arg Asn Asp Val Leu Asp Asp Ser Lys
    995   1000   1005

Cys Thr His Gln Glu Lys Val Thr Ile Gln Arg Cys Ser Glu Phe Pro
  1010   1015   1020

Cys Pro Gln Trp Lys Ser Gly Asp Trp Ser Glu Cys Leu Val Thr Cys
1025   1030   1035   1040

Gly Lys Gly His Lys His Arg Gln Val Trp Cys Gln Phe Gly Glu Asp
        1045   1050   1055

Arg Leu Asn Asp Arg Met Cys Asp Pro Glu Thr Lys Pro Thr Ser Met
        1060   1065   1070

Gln Thr Cys Gln Gln Pro Glu Cys Ala Ser Trp Gln Ala Gly Pro Trp
      1075   1080   1085

Gly Gln Cys Ser Val Thr Cys Gly Gln Gly Tyr Gln Leu Arg Ala Val
  1090   1095   1100

Lys Cys Ile Ile Gly Thr Tyr Met Ser Val Val Asp Asp Asn Asp Cys
1105   1110   1115   1120

Asn Ala Ala Thr Arg Pro Thr Asp Thr Gln Asp Cys Glu Leu Pro Ser
        1125   1130   1135

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Cys His Pro Pro Pro Ala Ala Pro Glu Thr Arg Arg Ser Thr Tyr Ser
          1140                1145                1150
Ala Pro Arg Thr Gln Trp Arg Phe Gly Ser Trp Thr Pro Cys Ser Ala
          1155                1160                1165
Thr Cys Gly Lys Gly Thr Arg Met Arg Tyr Val Ser Cys Arg Asp Glu
     1170                1175                1180
Asn Gly Ser Val Ala Asp Glu Ser Ala Cys Ala Thr Leu Pro Arg Pro
1185                1190                1195                1200
Val Ala Lys Glu Glu Cys Ser Val Thr Pro Cys Gly Gln Trp Lys Ala
               1205                1210                1215
Leu Asp Trp Ser Ser Cys Ser Val Thr Cys Gly Gln Gly Arg Ala Thr
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94

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